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ABSTRACT

The publication consists of Congressional hearings before the Ad Hoc Committee on Maritime Education and Training: (1) June 26, 1974 hearing pertaining to officer requirements and (2) November 19, 1974 hearing on maritime education regarding safety at sea. Estimated cost per graduate for the U. S. Merchant Marine 1973 class was $31,100. Supply and demand projections for 1974-84 are listed for deck and engine officers in the U. S. Merchant Marine as well as coverage of National Maritime Research Center Projects. Material supplied by the Coast Guard includes: a status report on the Merchant Marine licensing examination program, maritime training of individuals involved in violations, report of Merchant Marine investigations and hearings, seamen's employment analysis, source of officers, course subjects for deck officers, and training improvements. (Author/EA)

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MARITIME EDUCATION AND TRAINING—MISCELLANEOUS

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HEARINGS

BEFORE THE

AD HOC COMMITTEE ON MARITIME EDUCATION AND TRAINING

OF THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES HOUSE OF REPRESENTATIVES

NINETY-THIRD CONGRESS

SECOND SESSION

ON

OFFICER REQUIREMENTS

Future Requirements of the U.S.-Flag Merchant Marine Fleet for Licensed Officers

JUNE 26, 1974

MARITIME EDUCATION REGARDING SAFETY AT SEA

Relevancy of the Various Systems of Maritime Education to the Issue of Safety

NOVEMBER 19, 1974

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CONTENTS

OFFICER REQUIREMENTS

Hearing held— Page
June 26, 1974 1
Statement of—
Casey, Howard F., Deputy Assistant Secretary for Maritime Affairs, Department of Commerce 2
Friedberg, Arthur W., Director, Office of Maritime Manpower, Department of Commerce 2
Additional information supplied by—
Casey, Howard F.:
Cost per graduate for class of 1973 50
Deck and engine officers in the U.S. Merchant Marine: Supply and demand, 1974–84 5
National Maritime Research Center Projects, Kings Point, N.Y. 54

MARITIME EDUCATION REGARDING SAFETY AT SEA

Hearing held—
November 19, 1974 75
Statement of—
Benkert, Rear Adm. William, Chief, Office of Merchant Marine Safety, U.S. Coast Guard 76
Additional material supplied by—
Coast Guard:
A status report on the Merchant Marine Licensing Examination Program 77
Maritime training of individuals involved in violations 102
Report of Merchant Marine Investigations and Hearings 90
Seamen's employment analysis, nationwide median ages 93
Source of officers 103
Subjects for deck officers of ocean or coastwise steam or motor vessels 82
Training improvements 98
Communications submitted for the record—
Siler, Adm. O. W., letter of December 20, 1974, to Hon. Leonor K. Sullivan 106
Sullivan, Hon. Leonor K., letter of January 2, 1975, to Adm. Owen W. Siler 107

OFFICER REQUIREMENTS

WEDNESDAY, JUNE 26, 1974

HOUSE OF REPRESENTATIVES,
AD HOC COMMITTEE ON MARITIME EDUCATION AND
TRAINING OF THE COMMITTEE ON
MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The committee met, pursuant to notice, at 10:10 a.m., in room 1334, Longworth House Office Building, Hon. Leonor K. Sullivan (chairman of the full committee) presiding.

Mrs. SULLIVAN. The committee will come to order.

Mr. Casey, it looks like you are our only witness this morning. I am sure you know that we have been making a study under an ad hoc committee of all of the State academies as well as the U.S. Merchant Marine Academy at Kings Point and a number of industry schools.

The ad hoc committee has visited many of the academies under the chairmanship of Congressman Rooney of Pennsylvania. They have had some very interesting and, I think, fruitful meetings at these schools.

When they began, the ad hoc committee sent questionnaires to all of these schools and to date, as I said, have made onsite inspections of several of the campuses in an effort to gather as much information as possible about their financial structures, the type and quality of the education being offered, the capacity of the facilities, the caliber of the administration and faculty, the motivation of the students, and a host of other factors which relate to making a sound determination of the proper level of Federal support for the institutions.

Obviously any meaningful study of maritime education must be made within the context of our country's need for the kind of trained individuals which these schools are producing. Therefore, today the ad hoc committee begins hearings on the subject of the future requirements over the next decade of the U.S.-flag merchant fleet for licensed officers and sources of supply of these officers.

The Maritime Administration has recently completed a rather comprehensive analysis of this problem. I understand there is a copy here at each one of the member's desks. I have not seen it as yet. So without objection this study will be inserted into the record following your prepared statement, Mr. Casey.

Since you are going to be the only witness, you may proceed as you wish and then we will begin the questions.

STATEMENT OF HOWARD F. CASEY, DEPUTY ASSISTANT SECRETARY FOR MARITIME AFFAIRS, DEPARTMENT OF COMMERCE, ACCOMPANIED BY: ARTHUR W. FRIEDBERG, DIRECTOR, OFFICE OF MARITIME MANPOWER, DEPARTMENT OF COMMERCE

Mr. CASEY. Thank you, Madam Chairman.

I am accompanied this morning by Mr. Arthur W. Friedberg, Director of our Office of Maritime Manpower.

Madam Chairman and members of the special subcommittee, I am pleased to be here today at your invitation to present the views of the Maritime Administration on the projected requirements for and supply of licensed deck and engine officers in the U.S. merchant marine over the next decade.

The Maritime Administration has completed an intensive study of the projected merchant marine officer supply and demand picture over the next 10 years as part of its normal planning review of its Kings Point and State academies programs. These studies are repeated periodically and are now on a 2-year cycle of updating. With your permission, I would like to move directly to the principal areas treated in the text of the study dated May 1974 which has been previously supplied to you.

The demand for seafaring officers depends on two key factors. One of these, clearly, is the size of the U.S.-flag fleet, and the largest of its components is the privately owned oceangoing fleet. During the next 10 years, we expect the character of this fleet to change rather dramatically. The last vessels of World War II construction are expected to disappear gradually, and the full impact of the Merchant Marine Act of 1970 will materialize in the form of a technologically advanced and efficient U.S. fleet. We are already seeing these effects today, and they have broad significance in the requirements we will have for qualified merchant marine officers.

The projection used in the study indicates that in terms of the number of ships, the ocean fleet is expected to stabilize and then to begin growing modestly in absolute numbers after the next 2 or 3 years. As this happens, merchant marine officers will have to be trained in the use of increasingly sophisticated equipment, and the number of ships that they will have to man will gradually increase.

The second key factor determining the demand for seafaring officers is the number of men—or women—required to keep each billet aboard ship continually filled on a year-round basis. Paid vacation and other normal breaks in service, as well as the changing composition of the fleet, play a large part in setting the number of seafarers required to fill each billet. In 1969, negotiated vacation benefits for merchant marine officers jumped sharply, and there are indications that they will continue to inch upward during the next few years. In addition, we are even at this point beginning to see our fleet evolving into a fast-turnaround fleet, made up of ships that minimize the amount of time spent in port and hence also the available free time in port that has traditionally attracted people to a seafaring life. Labor-management contracts explicitly recognize the necessarily restricted amount of free time available to crews of fast-turnaround ships, and additional vacation is provided to these crews. As the composition of the fleet changes, the required number of men per billet will increase.

We have also examined the other major segments of the U.S.-flag fleet and have seen further evidence of increasing demand. The inland waterways, the Great Lakes, and the offshore exploratory oil drilling industry show a growing requirement for properly trained officers. The growth of cargo carriage and other marine-related activities, as well as the demands of more complicated equipment and stricter regulations, will result in a rise in manpower requirements throughout the maritime industry.

On the supply side of the manpower forecast, we expect new merchant marine officers to come from four traditional sources: the U.S. Merchant Marine Academy, the State academies, the industry schools, and the hawsepipe.

We assumed in our analysis that Kings Point and the State academies would continue to produce new officers at approximately their present rates. To these numbers we added the supply of new officers from industry schools. In fact, only one such school today is training new officers for original third licenses, and that is the Calhoon MEBA Engineering School. The planned annual output of this school was added to the supply of engine officers from the Federal and State academies. Finally, we added our estimate of new deck and engine officers who by self-study are expected to attain licensed status through the hawsepipe.

This gave us the total number of new deck and engine officers that we could expect in each of the next 10 years. These new inputs, reduced for normal attrition, were used in the study to augment the declining current work force, and from this combination we arrived at the total number of deck and engine officers that we expected would be available in each year during the coming decade.

The next step in our analysis involved putting the two sides of the equation together. On one side we found the demand curve gradually rising with the impetus of the Merchant Marine Act of 1970 and with an increasing number of men required to fill each billet in a high-technology, fast-turnaround fleet. On the other side we found the total supply of officers slowly falling. This occurred because the decline in the present work force more than matched the input of new officers from all sources. The combination of these projections led to the conclusion that if present trends continue, a shortage of both deck and engine officers will occur before the end of the 1970's.

Since the projected timing of the shortage would call for a near-term policy response, we considered it advisable to test the sensitivity of the projected shortage to changes in various assumptions. We tried a wide variety of alternative assumptions, with particular emphasis on the effect of reducing attrition rates in the industry. In almost all scenarios the timing of the shortage was changed by no more than 1 or 2 years, if at all. The principal exception occurred when we assumed that attrition of the present work force could be reduced from an average annual figure of 7.6 percent to an average of 5 percent. With that assumption, the shortage did not materialize until the 1983–1984 time period. Inasmuch as the existing work force remains as the predominant portion of the total available work force, even a slight decrease in the attrition rate of this segment would significantly delay the crossover point and materially affect the ongoing relationship of supply and demand of seagoing officer personnel.

Two major qualifications, however, on the demand side of our projections, need to be added here. The projection of an officer shortage is crucially dependent on the fleet forecast used throughout. The two most important variables in the fleet projection are the fate of the the modern break bulk ships and the continuation of new construction contract awards over the next several years. If all of the 107 break bulk ships built since 1960 were phased out during the next half dozen years, a shortage of officers would probably not develop. We feel most of these ships are economically viable in one form or another and that most of them will still be sailing 10 years from now.

A second important variable in the fleet forecast, however, involves the rate of new construction. If the momentum of the Merchant Marine Act of 1970 is maintained over the next few years, the delivery of new ships will generate an appreciable level of demand for officers toward the end of this decade. Without this new demand, an officer shortage would probably not occur.

Considering all of these factors, we recognize that short-term fluctuations in both supply and demand can alter the timing of any potential officer shortage. With the provisos I have discussed, however, our best estimate at this time is that a shortage of both deck and engine officers will probably occur by the end of the 1970's, unless changes in current trends take place.

There are several means available to increase the effective supply of officers and thus avert a shortage. We believe that initial numeric increases should be encouraged to come from the industry schools since they have a more flexible response time than other sources. During the Vietnam situation industry schools responded rapidly to increased demand and at their peak were producing a total of approximately 500 officers per year. Included in this was the Calhoon MEBA Engineering School, which today is the only industry school still producing new officers, although at a much reduced rate. The other industry schools were principally operating short courses, producing new officers by training experienced unlicensed deck and engine personnel in courses of approximately 90–120 days.

At the same time, a positive motivational program aimed at increasing retention of graduates in seafaring careers should be instituted in the Federal and State academies. If a higher percentage of new graduates could be encouraged to continue sailing, the effective supply of new officers would be increased. We also intend to undertake additional research to determine more fully the reasons why new graduates leave the maritime work force over a period of years for other jobs.

Finally, for the longer term, current Federal support ceilings intended to limit enrollment at State academies should be reviewed in relation to their impact on long-term supply.

As I have noted, the results of this study are highly sensitive to future Government actions, particularly in the area of new construction, and to future industry actions, in collective bargaining, for example. For these reasons, I believe we should proceed with great care in expanding the supply of new officers in the maritime industry. Our first response should be moderate because of the uncertainties involved, but we should simultaneously be preparing for further expansion in the event that becomes necessary. To aid in making these later decisions, we intend to continue close monitoring of manpower developments and expect to make a detailed report again in 1976.

This concludes my prepared testimony, Madam Chairman. I will be happy to try to answer any questions you might have.

[The study follows:]

DECK AND ENGINE OFFICERS IN THE U.S. MERCHANT MARINE: SUPPLY AND DEMAND, 1974–1984

TABLE OF CONTENTS

Page.

I. Introduction
II. Conclusions and Recommendations
III. Demand
  A. Active U.S.-Flag Oceangoing Fleet, 1,000 Gross Tons and Over
  B. Great Lakes
  C. Offshore Oil Mineral Explorations and Inland Waterways
  D. Other Areas of Demand
IV. Supply
  A. Current Active Work Force
  B. U.S. Merchant Marine Academy
  C. State Academies
  D. Industry Training and Hawsepipe Sources
V. Projected Relationship Between Supply and Demand

I. INTRODUCTION

During calendar 1969 the Maritime Administration undertook a comprehensive study of seagoing officer demand, compared with potential supply of officers through the decade of the 1970's. That study, dated February 1970, was submitted as a special Report to the Subcommittee on Maritime Education and Training of the House of Representatives Committee on Merchant Marine and Fisheries. The study projected a surplus of men over jobs through 1982, on the basis of fleet projections, attrition of the estimated 1969 active work force, and stated output plans and capabilities of all then-existing sources of new officers. Recommendations were made concerning program goals of federally sponsored training programs and limitation of federal financial support for merchant marine officer training programs.

The study here presented reflects the current status of matters dealt with in the earlier Report as they have changed under the influence of government and industry actions taken since 1970. Federal support levels for the State Maritime Academies have been reduced to pre-Vietnam levels.[1] This action, together with public awareness of declining employment opportunities, has led to entry-class sizes in the State Academies significantly below the levels planned by the schools in 1969. With the exception of the Calhoon MEBA Engineering School, all industry training programs for new officers have ceased.[2] Continuation of firm enrollement controls at the U.S. Merchant Marine Academy, improvements in the quality of training, program diversification, establishment of the National Maritime Research Center, and exploration of broader markets for Kings Point graduates have significantly augmented the value of the Federal Academy to the maritime industry and to marine-related federal programs.[3] While the analysis presented in this paper covers in depth the statistical balance of merchant marine officer supply and demand, the matter of federal support of the State Academies and the U.S. Merchant Marine Academy must relate to broader issues. The overall role of federally supported education and training as an integral part of a major federal effort to revitalize the U.S. Merchant Marine and promote both foreign and domestic U.S. waterborne commerce is an example of such an issue.

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[1] "Commencing with the next budget cycle Federal support and encouragement of training programs for merchant marine officers should be reduced from present levels and directly related to demand." p. 2, Report to the Subcommittee dated February 1970.

[2] "For the union schools, the supply is one of capability based on present and past performance. It is not expected that these schools will maintain output in a surplus situation." p. 13, Report to the Subcommittee dated February 1970.

[3] "The Maritime Administration will continue to concentrate its efforts on providing the best possible training at the U.S. Merchant Marine Academy for officers for U.S. merchant ships. The Academy should serve as a national laboratory of what marine-oriented training should be. We should explore the possible use of the Academy to provide additional marine research and development capability, to participate in industry efforts to develop improved management techniques, and to investigate the potentialities for expansion into oceanographic training." p. 18, Report to the Subcommittee dated February 1970.

Based solely on consideration of the Federal and State Academies and other officer sources as producers of career seafarers, the current picture is fundamentally changed from that presented four years ago in the Report to the Subcommittee. The analysis presented herein indicates a shortage of deck and engine officers by the end of the decade, and possibly earlier. The trend toward a crossover point, at which demand exceeds the available supply, has been suggested by interim in-house analyses and is given additional support in the analysis that follows.

II. Conclusions and Recommendations

A. Conclusions

1. The results of this study indicate that at current levels of production of new deck and engine officers, including their commitment to seafaring careers, a shortage of deck and engine officers will probably occur by the end of the 1970's.

2. The baseline supply of officers that resulted in a projected shortage was tested under a wide variety of alternative assumptions, and the crossover dates, in which demand first exceeds supply, were in almost all cases virtually unchanged. One alternative assumption considered the potential impact of a sharp reduction in attrition for the currently active work force, and this assumption did result in a substantially delayed crossover date although this eventuality is considered highly improbable.

3. The projection of an officer shortage, however, is crucially dependent on the fleet forecast used throughout. If all break bulk ships, for instance, were phased out faster than expected or if fewer new vessels than expected were constructed in the late 1970's, the shortage might not materialize. The research director of one of the leading officer unions seriously questions whether actual fleet size will meet the levels projected in this analysis.

4. The year in which the projected shortage first occurs is significantly affected by the assumptions establishing the number of men required to fill each billet in the future when supply and demand converge. Two major bargaining sessions are expected between 1975 and the end of 1979. Changes in pension eligibility, other retirement incentives, and vacation benefits could shift the potential shortage point.

5. The projection of a shortage is based on yearly average figures and ignores the effect of temporary, local, or seasonal bottlenecks. A signal of impending imbalance would be apparent, for example, if manning difficulties arise in future years during the traditional summer vacation period.

B. Recommendations

1. Initial increases in new supply to meet an expected shortage should be encouraged to come from industry schools since they have a more flexible response time than other sources.

2. A positive motivational program aimed at increasing the retention of graduates in seafaring careers should be instituted in the Federal and State Academies. Further research should be undertaken to determine the causes of attrition among new graduates and in the work force as a whole.

3. Current federal support ceilings intended to limit enrollment at State Academies should be reviewed in relation to their impact on long-term supply.

4. Since the results of this study are highly sensitive to future government and industry actions and since short-term fluctuations in both supply and demand can alter the timing of any shortage, in-depth review should continue and a detailed study report again made in 1976.

III. Demand

A. Active U.S.-Flag Oceangoing Fleet, 1000 Gross Tons and Over

The privately owned fleet has undergone a marked decline that began in 1969. The rate of decline actually experienced has exceeded the rate projected in earlier studies, but the size and composition of the U.S. merchant fleet as it will change from 1974 through 1977 are now predictable with reasonable accuracy.

During that period the increasing age of unconverted ships of World War II vintage is expected to remove almost all of the remaining ships in this category from the active inventory. As of January 1, 1973, unconverted World War II ships comprised 36% of the private fleet, but all of this group are now at least

28 years old, and their rapid attrition is expected to continue until virtually none are left three years from now. The fleet in 1977 will then be made up of the remainder of the current fleet plus the flow of new construction stimulated by the Merchant Marine Act of 1970. The ships to be delivered by 1977 have already for the most part been contracted for, and thus the contribution of new construction to the fleet is also known with reasonable accuracy through 1977. Beyond that point the fleet forecasting system used by the Maritime Administration in this study is based on expectations of economically feasible ship types in the context of changing trade patterns and under the impact of the comprehensive authority of the 1970 Act.

This forecasting system is used to project the fleet to 1984 (See Table 1.) It should be noted that the projected number of new ships entering the fleet between 1975 and 1984 is below the input projected in earlier studies and represents a conservative forecast of new construction. The reduction in new inputs is explained by the shift in shipping demand to new vessel types, particularly those designed for carriage of raw materials. Total increase of deadweight tonnage from new construction, however, is substantially greater than what was earlier projected because the new ships typically are large vessels that take advantage of economies of scale.

TABLE 1.—U.S.-FLAG PRIVATELY OWNED OCEANGOING MERCHANT SHIPS, 1000 GROSS TONS AND OVER[1] 1974-84

	Fleet as of Jan. 1	Phased out	Phased in	Fleet as of Dec. 31
1975	575	55	18	538
1976	538	41	20	517
1977	517	8	20	529
1978	529	10	24	543
1979	543	10	23	556
1980	556	10	18	564
1981	564	12	22	574
1982	574	9	19	584
1983	584	5	17	596
1984	596	9	19	606

[1] Offices of Maritime Manpower Projection, September 1973.

Fleet size and composition are used to determine the number of billets to be allocated to deck and engineering officers. For the current fleet the number of billets is derived from U.S. Coast Guard documents and records of the Maritime Administration identifying each oceangoing cargo ship under U.S. registry. Billets attributable to new construction are developed from manning provided in subsidy applications submitted to the Maritime Administration and from manning on comparable ships for vessels with which the government has no direct financial involvement. The demand provided by the privately owned fleet, as developed in this manner, is augmented slightly by officer billets aboard the small number of ships in the commercially manned tanker fleet owned by the U.S. Navy and operated under contract by commercial tanker companies. Those Navy vessels draw on the same licensed manpower pool as the privately owned fleet and are hence included with that larger group in the demand analysis. Presently the Navy is operating only twelve such tankers, and their number is expected to fall to four by the end of 1974. Nevertheless, for purposes of inclusiveness, they are added here. Manpower demand is further supplemented by the Civil Service officer cadre contained in projected planning by the Military Sealift Command (MSC), Department of the Navy. While MSC manpower requirements may not always attract cadet graduates from the established academies, MSC employment opportunities do syphon off certain skills from among ships' officers in the privately operated segment of the merchant fleet, in addition to providing employment for ex-Navy and Coast Guard personnel.

To this point in the analysis, therefore, demand for deck and engineer officers between 1974 and 1984 includes four components: (a) billets on the declining balance of the currently active fleet, (b) billets from the input flow of new and larger vessels, being constructed under the Merchant Marine Act of 1970, (c) billets aboard the small Navy-owned tanker fleet operated under contract by commercial tanker companies, and (d) billets on the Navy-owned MSC nucleus fleet manned by Civil Service personnel.

Each of these officer billets requires more than one licensed officer during the course of a year's operation. A master, for example, on most container ships, barge carriers, and certain other types of advanced ships now earns a paid vacation equal to slightly more than two-thirds of the number of days he works (i.e., 20 days of paid vacation for each 30 days of employment). In any period of 360 days he could be on paid vacation 41% of the time. For other deck officers on the same ships, the rate is reduced to 16 days for each 30 days of employment. Officers in this category can spend 35% of each calendar year on paid vacation. Container ships and others in this category are "fast-turnaround" ships which because of their expedited cargo-handling systems spend little time in port. Additional vacation serves to compensate for the necessarily restricted amount of free time available to the crew.

In addition to normal vacation, certain officers earning overtime pay can convert it into additional vacation time. These vacation factors combine with other normal breaks in service to increase the required manpower significantly above the nominal number of billets in the privately operated fleet. Furthermore, the ratio of required manpower to actual billets is expected to rise during the period covered by this projection because of the increasing number of fast-turnaround ships and trends in collective bargaining.

The required officer-to-billet ratios used for the baseline projection in this study are 2.0 in 1974, 2.1 in 1975, 2.2 beginning in 1976, and 2.3 beginning in 1978. These ratios are regarded as conservative estimates of the manpower actually to be required, especially because of the recent liberalization of vacations. Even the highest ratio used in the baseline projection (2.3 beginning in 1978) is below actual experience for the 1972 active work force but experience in 1972 reflects a conscious spreading of work at a time of oversupply and is considered a temporary phenomenon that will abate rapidly during the period of the projection.

The factors considered above, in combination with an allowance for port relief officers and requirements for other in-port licensed personnel, can be expected to establish a ratio of 2.3 officers per billet as a minimum long-term requirement. This completes the underlying structure used to project demand for deck and engine officers in the active U.S.-flag oceangoing fleet of 1,000 gross tons and over. (See Tables 2 and 3.)

TABLE 2.—DECK OFFICER DEMAND, 1974-84[1]

	Privately operated	MSC nucleus civil service	Total
1974	5,252	290	5,542
1975	5,061	290	5,351
1976	5,042	290	5,332
1977	5,144	290	5,434
1978	5,511	290	5,801
1979	5,628	290	5,918
1980	5,688	290	5,978
1981	5,743	290	6,033
1982	5,826	290	6,116
1983	5,925	290	6,215
1984	6,001	290	6,291

[1] Office of Maritime Manpower, September 1973.

TABLE 3.—ENGINE OFFICER DEMAND, 1974-84[1]

	Privately operated	MSC Nucleus Civil Service	Total
1974	6,080	364	6,444
1975	5,840	364	6,204
1976	5,788	364	6,152
1977	5,878	364	6,242
1978	6,270	364	6,634
1979	6,378	364	6,742
1980	6,417	364	6,781
1981	6,456	364	6,820
1982	6,523	364	6,887
1983	6,613	364	6,977
1984	6,672	364	7,036

[1] Office of Maritime Manpower.

B. GREAT LAKES

Great Lakes operations during the 1973 nine-month (April–November) shipping season provided an average monthly employment for 748 Deck Officers and 786 Engineering Officers. While this employment level represented an improvement of about 0.9 percent over the 1972 shipping season, the 1973 level was 2.0 percent under that of 1971.

The monthly averaged number of Great Lakes vessels varied only slightly from 184 such craft in 1971, 179 in 1972, and 181 in 1973. A total of nine overage vessels were decommissioned during the first half of 1973, three of which were replaced by new construction during the year. Some nine bulk and ore carrier types are expected to be added to the fleet during the period 1974–1978 but these are expected to replace existing obsolete vessels and increase productivity without adding to the numerical size of the fleet. As a consequence, no marked increase in the number of deck and engineering officers' billets is expected.

Great Lakes shipowners continue to be plagued by the increasing habit of ships' crews to opt for mid-summer vacations now that such benefits are coming into wider usage through union contracts. In past years, vaction periods were generally observed during the winter off-season. This tradition has changed with the younger work force of ships' officers that have joined the Great Lakes shipping industry. (See Table 4).

TABLE 4.—CHANGING AGE OF GREAT LAKES WORK FORCE

	Total work force	Age 18 to 30	Percent of 18 to 30 group
1969:			
Deck officers	[1] 663	12	1.8
Engine officers	964	37	3.8
1972:			
Deck officers	[1] 611	28	4.6
Engine officers	[1] 908	78	8.6

[1] Excludes masters.

The Lake Carriers Association polled their membership during several periods in 1973 to ascertain the shortage of ships' officers. Results of four polls provided the data shown in Table 5.

TABLE 5.—GREAT LAKES OFFICER SHORTAGE

Date	Number of ships polled	Unfilled officer billets	
		Deck	Engine
July 24, 197	127	29	39
Aug. 21, 1973	127	43	62
Oct. 16, 1973	128	23	45
Dec. 1, 1973	126	17	27

The 1973 shipping season, which for the first time extended well through the month of December with some 169 vessels operating, was lengthened by the steel industry's demand for ore that kept about 80 Great Lakes bulk carriers operating into the "Extended Season". Some of the U.S. Steel Corporation's vessels were scheduled to continue sailing into February 1974, ice and weather conditions permitting. As the Great Lakes shipping seasons are slowly extended either by permissive climatic conditions or, more reliably, through advanced technology to keep ship lanes and locks ice-free, the need for a larger year-round work force will require a drastic change in the seasonal employment pattern that has prevailed up to a few years ago.

Applicants for Coast Guard licensing as deck officers on Great Lakes vessels must possess a minimum of one year's experience as a helmsman on the Lakes to establish necessary qualifications for pilotage comprehension and ability. This essential qualification has, in the past, served to eliminate as Great Lakes officer candidates most deck officers trained for the ocean trades. While the U.S. Merchant Marine Academy has been placing cadets aboard Great Lakes vessels for their

sea-year training to meet a portion of the USCG requirements for licensing as Great Lakes deck officers, State maritime academy deck officer graduates were confronted with the requirement of the one-year experience as helmsman to gain piloting expertise. Marine engineer graduates require no specialized indoctrination to Great Lakes operations and are therefore ready to sail on their licenses upon graduation. The effect of the added experience factor required of deck officer graduates is evident in the reaction from the 1973 graduating classes at the California, Maine and New York Maritime Academies. (See Table 6.)

TABLE 6.—GREAT LAKES JOBS ACCEPTED BY 1973 GRADUATES OF CALIFORNIA, MAINE AND NEW YORK MARITIME ACADEMIES

	Graduates		
	Deck	Engine	Total
Total Great Lakes job offers	38	52	90
Employment accepted	7	23	30
Percent acceptance	18.4	44.2	33.3

The output of new ships' officers for Great Lakes vessels has experienced a sharp decline during recent years in the number of applicants aspiring to licensed officer status. The Lake Carriers Association, a pioneer in the training of Lakes ships' officers, revealed the extent of the decline. (See Table 7.)

TABLE 7.—GREAT LAKES ORIGINAL LICENSES

	Deck [1]	Engine	Total
1970	12	16	28
1971	11	11	22
1972	12	3	15
1973	9	0	9

[1] Excludes those licensed solely as pilots.

Officer training facilities maintained by the Marine Engineers' Beneficial Association, District 2, (MEBA–2) and its affiliate, the Associated Maritime Officers (AMO) have been preparing applicants for licensed status since 1968. Output has been some 15 to 20 original licenses annually of which approximately 30 percent were in the deck and the remainder in the engineer officer category. The 1973 output from this source was 13 newly licensed officers, all of them in the engine officer category.

The foregoing highlights of Great Lakes officer training indicate that a total of only nine deck officers and 13 engineering officers joined the Great Lakes ships' officer work force from these sources in 1973. This marginal output, based solely on individual motivation, will be unable to sustain the skilled manpower needs of the Great Lakes fleet. It will create future demand considerably in excess of the ninety job offers for licensed deck and engine officers received in 1973 by the three state maritime academies who reported Great Lakes job offers.

C. OFFSHORE OIL, MINERAL EXPLORATIONS AND INLAND WATERWAYS

The Offshore Marine Services Association, headquartered in New Orleans but worldwide in operations, has reported a significant increase in demand for trained vessel personnel. The Association has indicated that the oil and mineral industry together with its supporting water-borne servicing needs could easily absorb 1000 trained men at the present time. The 400 supply craft (representing 90% of the U.S. industry) each require two licensed deck officers (three if supply operations are conducted on a 24-hour basis) and, with standard automation features, one licensed engineer with a limited Chief Engineer's license. Furthermore, there are currently 36 semi-submersible drilling units under construction in the U.S. Each of these will require four licensed deck officers and one Chief Engineer while on the drilling site, and when underway to new sites will require two additional licensed assistant engineers. Finally, the Intergovernmental Maritime Consultative Organization currently has before it a proposal affecting non-propelled drilling

barges. It would require the presence of a licensed officer in lieu of two able bodied seamen now being carried. Industry consensus would indicate that a new IMCO standard in this regard is quite possible.

With regard to inland waterways it should be observed that this segment of the industry provides in excess of 80,000 jobs aboard tugs and towing craft of which perhaps 15% is comprised of supervisory, or officer-level, personnel. Until fairly recently, inland waterways employers, in the absence of specific requirements of law, were free to engage such personnel whose employment experience and familiarity with particular river systems were adequate to assure reliable operations. However, it became increasingly evident that there was a definite need for responsible trained officers on towboats where protection of large investments through safe navigation, efficient operation, and pollution avoidance was becoming more and more important. Propulsion plants now require in excess of 8,000 horsepower to move barge tows carrying 40,000 tons and more of cargo. Automation of main propulsion machinery and related auxiliary equipment has come into being. In addition, the size of larger tows now exceeds 5 acres. Pollution prevention regulations, also, place greater responsibility on all personnel aboard towboats. Accordingly government evaluation of inland waterways operations pointed out the need for legislation whereby formal qualifications for officers' licenses must be met. Major catastrophes involving tows repeatedly led to serious questioning of unregulated employment practices on U.S. river systems. As a result of all of these factors, the Towing Vessel Operator Licensing Act (P.L. 92-340) was passed requiring that uninspected towing vessels while underway be under the direction and control of a person licensed by the Coast Guard. And on March 2, 1973, Coast Guard promulgated rules governing the issuance of licenses for the operation of uninspected towing vessels that implement the Act.

The overall demand from these segments of the industry cannot be accurately measured. But reports on hirings of recent graduates from the Federal and State Academies indicate a growing interest by these segments of the industry in recruiting trained officer personnel directly from these sources.

D. OTHER AREAS OF DEMAND

In addition to the categories discussed above, a major area of demand for licensed personnel is represented by the seafaring jobs for trained merchant marine officers aboard the privately operated fleet of oceanographic research vessels, the dredges operated by the Army Corps of Engineers, and the civil service-manned vessels of the National Oceanic and Atmospheric Administration (NOAA). This latter category has become a significant area of employment for academy graduates. Of the incomplete record covering employment offers and acceptances by 1973 graduates, four state academies received approximately 70 job offers for research vessels, Corps of Engineer dredges and NOAA craft. About 15 deck and 21 engine officer graduates elected to accept job offers in this category.

An additional component of demand is provided by the management needs of private maritime companies. First-hand operating experience is a necessary part of training for many management personnel, and the companies must frequently draw on the licensed officer work force to fill key positions ashore. Government agencies, on the federal, state, and local levels, often require the same experience of personnel in administrative and regulatory positions and hence place yet another essential demand on the seafaring officer work force.

IV. Supply

The methodology used in this section of the analysis to project the supply of deck and engine officers through 1984 is in most respects similar to that used in the Report to the Subcommittee dated February 1970. (Exceptions, where occurring, are noted.) The resulting projection represents an extension of current trends through time rather than a traditional supply curve relating the size of the work force to the wage offered. In this analysis, however, we use "supply" to refer to our projection of trends through 1984 of the manpower available in each year from all sources including the current work force.

A point of departure from the methodology used in earlier analyses is that we explicitly take into account in the statistical part of this study areas of demand other than that from oceangoing ships 1,000 gross tons and over. As was indicated in Section III, demand generated in the offshore exploratory drilling industry,

in the inland waterways, and in other sectors constitutes a substantial and expanding part of the total requirement for deck and engine officers. In previous studies, although these other areas of demand were explicitly recognized, no attempt was made to include them in the statistical analysis, for the reason that the growth of this component of manpower demand was difficult to quantify. Even knowledge of the expected number of vessels involved would be insufficient to form a reasonable estimate because, as explained in Section III, the number of billets is only one of several primary factors in determining derived manpower demand. The same problem remains in the current study: it is difficult to attach defensible numbers to the non-oceangoing requirements; however, these other demands on the work force can no longer be realistically treated as peripheral. Therefore, in an effort to adjust the baseline projection into closer conformity with the "real" level of demand, we subtracted an arbitrary (but probably conservative) factor of 15% from new academy output only, to account for demand from sectors not traditionally a part of this analysis.

Fifteen percent is significantly less than the fraction that is presently being taken, for instance, from the graduating classes of the State Academies. But the current attraction to other marine sectors may be expected to diminish as seagoing job availability for new graduates increases. As that occurs, a factor of 15% is expected to be consistent with an overall supply-demand equilibrium in combination with a long-term growth trend in the other marine sectors. This adjustment was made by reducing the baseline size of each graduating class from the Federal and State Academies by fifteen percentage points. (As explained below, State Academy graduates were reduced an additional eight percentage points for the loss to non-marine-related employment.) The remaining graduates were assumed to be available for employment aboard oceangoing ships 1,000 gross tons and over.

Total supply is then aggregated from five component parts: the current (1972) work force (which includes both private and civil service employees), new graduates of the U.S. Merchant Marine Academy, new graduates of the five seacoast State Marine Academies (with Michigan excluded as not generally supplying the oceangoing fleet), new graduates of the industry training schools (of which only one is now producing original third licenses), and new output from the hawsepipe. Of these sources, the largest single constituent of the baseline projection and of all the variations on the baseline dealt with in Section V is the current work force. Under most of the sets of alternative assumptions analyzed in the next section, the total supply in each of the departments is smaller at the end than at the beginning of the projection period and decreases steadily from 1974 through 1984.

A. CURRENT ACTIVE WORK FORCE

The current active work force (Tables 8 and 9) is projected through 1984 as the balance remaining after each year's attrition. Employment data compiled from U.S. Coast Guard records for calendar year 1972 provided the count for the active work force. The projection submitted to the Committee in 1970 used a count derived from the work force active in calendar 1968. Attrition techniques applied to the age 50–65 group in the earlier study were extended to the age 25–36 group in the 1972 work force to reflect expected loss of low-seniority (younger) men as a result of competition from other available employment.

B. U.S. MERCHANT MARINE ACADEMY (USMMA)

Availability of USMMA graduates is projected in Tables 10 and 11 for the graduating classes of 1973 through 1984. Assumptions concerning the attrition rate of graduate availability are similar to those used in the 1970 study, which in turn were based on earlier graduate employment records maintained by the Academy. In the current study, attrition rates were smoothed somewhat to a constant 10% per year, which appears to be more consistent with recent experience. Also, as noted above, 15% of each class graduating from Kings Point was assumed to go to areas of employment other than the traditional oceangoing jobs. The number of graduates in each class through 1984 has been updated to reflect currently expected levels. Enrollment at Kings Point is assumed in this projection to remain relatively constant throughout the period under consideration.

TABLE 8.—CURRENT DECK OFFICER WORK FORCE, 1972 [1]

	Number	Percent attrition
1972		
1973	6,697	
1974	6,088	9.1
1975	5,655	7.1
1976	5,244	7.3
1977	4,852	7.5
1978	4,492	7.4
1979	4,163	7.3
1980	3,842	7.7
1981	3,527	8.2
1982	3,237	8.2
1983	2,989	7.7
1984	2,754	7.9
	2,542	7.7

[1] Includes masters.

TABLE 9.—CURRENT ENGINE OFFICER WORK FORCE, 1972

	Number	Percent attrition
1972		
1973	6,860	
1974	6,127	10.7
1975	5,689	7.5
1976	5,262	7.2
1977	4,910	6.7
1978	4,562	7.1
1979	4,227	7.3
1980	3,934	6.9
1981	3,637	7.5
1982	3,384	7.0
1983	3,160	6.6
1984	2,940	7.0
	2,724	7.3

TABLE 10.—DECK OFFICERS—U.S. MERCHANT MARINE ACADEMY GRADUATES ENTERING AND AVAILABLE IN THE WORK FORCE [1] (BASELINE CASE)

Class of	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	82	74	66	60	54	48	44	39	35	32	29	26
1974		70	63	57	51	46	41	37	33	30	27	24
1975			85	77	69	62	56	50	45	41	37	33
1976				104	94	84	76	68	61	55	50	45
1977					89	80	72	65	58	53	47	43
1978						89	80	72	65	58	53	47
1979							89	80	72	65	58	53
1980								89	80	72	65	58
1981									89	80	72	65
1982										89	80	72
1983											89	80
1984												89
Total	82	144	214	298	357	409	458	500	538	575	607	635

[1] Attrition rate: 1st year: 15 percent of graduates go to sea; 2d year: 10 percent, and thereafter 10 percent annually.

TABLE 11.—ENGINE OFFICERS—U.S. MERCHANT MARINE ACADEMY GRADUATES ENTERING AND AVAILABLE IN THE WORK FORCE [1] (BASELINE CASE)

Class of	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	84	76	68	61	55	50	45	40	36	33	29	26
1974		87	78	70	63	57	51	46	42	37	34	30
1975			94	85	76	69	62	56	50	45	40	36
1976				78	70	63	57	51	46	41	37	34
1977					94	85	76	69	62	56	50	45
1978						94	85	76	69	62	56	50
1979							94	85	76	69	62	56
1980								94	85	76	69	62
1981									94	85	76	69
1982										94	85	76
1983											94	85
1984												94
Total	84	163	240	294	358	418	470	517	560	538	632	663

[1] Attrition rate: 1st year: 85 percent of graduates go to sea; 2d year: 10 percent; and thereafter 10 percent annually.

C. STATE ACADEMIES

The projection of availability for employment of graduates of the five seacoast State Academies is shown in Tables 12 and 13. As with the Federal Academy, the baseline projection analyzed in this section assumes 15% of new graduates go to other areas of marine employment. In addition, as was assumed in earlier studies, 8% of new graduates were considered to be drawn off to non-marine-related areas of employment. This factor is consistent with recent experience at the State Academies and recognizes both the value of maritime training in other fields and the general absence of restricted employment recruiting controls at the State Academies. The attrition rates for State Academy graduates were smoothed to 10% per year, making the rates identical to those applied to the Federal Academy. The expected number of graduates in each currently enrolled class has been adjusted to reflect present "dropout" rates during training. The projection includes graduates from two of the academies to be above current federal support ceilings.

TABLE 12.—DECK OFFICERS—STATE MARITIME ACADEMIES[1] GRADUATES ENTERING AND AVAILABLE IN THE WORK FORCE[2] (BASELINE CASE)

Class of	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	116	104	94	85	76	68	62	55	50	45	40	36
1974		139	125	113	101	91	82	74	60	60	54	48
1975			153	138	124	112	100	90	81	73	66	59
1976				146	131	118	106	96	86	78	70	63
1977					172	155	139	125	113	102	91	82
1978						172	155	139	125	113	102	91
1979							172	155	139	125	113	102
1980								172	155	139	125	113
1981									172	155	139	125
1982										172	155	139
1983											172	155
1984												176
Total	116	243	372	482	604	716	816	906	987	1,062	1,127	1,185

[1] Excluding Michigan.
[2] Attrition rate: 1st year: 77% of graduates go to sea; 2nd year: 10% and thereafter 10% annually.

TABLE 13.—ENGINE OFFICERS—STATE MARITIME ACADEMIES[1] GRADUATES ENTERING AND AVAILABLE IN THE WORK FORCE[2] (BASELINE CASE)

Class of	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	112	101	91	82	73	66	60	54	48	43	39	35
1974		138	124	112	101	91	81	73	66	59	53	48
1975			149	134	121	109	98	88	79	71	64	58
1976				144	130	117	105	94	85	77	69	62
1977					167	150	135	122	110	99	89	80
1978						167	150	135	122	110	99	89
1979							167	150	135	122	110	99
1980								167	150	135	122	110
1981									167	150	135	122
1982										167	150	135
1983											167	150
1984												167
Total	112	239	364	472	592	700	796	883	962	1,033	1,097	1,155

[1] Except Michigan.
[2] Attrition rate: 1st yr.: 77 percent of graduates go to sea; 2d yr.: 10 percent, and thereafter 10 percent annually.

D. INDUSTRY TRAINING AND HAWSEPIPE SOURCES

1. Industry Schools.—Output of qualified ship officers has been drastically curtailed during the past several years. Of the several industry-financed training facilities, all but the Calhoon MEBA Engineering School have discontinued preparation of new officer candidates and restricted their training programs to upgrading of officers already licensed. The output of the Calhoon School reached 205 graduates in 1971, an output level that was reduced in 1972 to 65. In 1973, following a U.S. Coast Guard directive that initiated a three-year curriculum to replace the previous two-year program, only 30 cadets were graduated. Commencing in 1974, the Calhoon School plans to limit its output of engineers to 90

graduates annually. Attrition has been computed on the same basis as the academies; that is, 10% per year, with all graduates going to sea, as shown in Table 14. No industry schools at this time have a regular program for producing original third-mate licenses.

2. Hawsepipe.—The number of men obtaining original third mate and third assistant engineer licenses through self-study declined sharply between 1970 (and 1972 and then rose somewhat during 1973, although not to previous levels (See Table 15.). The increase during 1973 is seen not as an indication of a trend but more likely as the temporary result of an increased amount of time ashore for unemployed seamen in the unlicensed group. For purposes of this analysis we assume a hawsepipe input of 25 deck and 30 engine officers per year for the period covered in the projection (See Tables 16 and 17.) This represents an appreciable decrement from the hawsepipe input used in the 1970 Report.

TABLE 14.—ENGINE OFFICERS.—CALHOON MEBA ENGINEERING SCHOOL GRADUATES ENTERING AND AVAILABLE IN THE WORK FORCE[1] (BASELINE CASE)

Class of	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	30	27	24	22	20	18	16	14	13	12	10	9
1974		90	81	73	66	59	53	48	43	39	35	31
1975			90	81	73	66	59	53	48	43	39	35
1976				90	81	73	66	59	53	48	43	39
1977					90	81	73	66	59	53	48	43
1978						90	81	73	66	59	53	48
1979							90	81	73	66	59	53
1980								90	81	73	66	59
1981									90	81	73	66
1982										90	81	73
1983											90	81
1984												90
Total	30	117	195	266	330	387	438	484	526	564	597	627

[1] Attrition: 10 percent annually.

TABLE 15.—ORIGINAL 3D OFFICERS' LICENSES ISSUED—FISCAL YEAR 1973

	Deck[1]	Engine[2]
Total licenses issued[3]	329	399
Federal and State academies	[4] 257	[4] 263
Calhoon (MEBA) January 1973		60
MEBA No. 2, Great Lakes	(5)	36
Lake carriers training	9	
Total issues accounted for	266	359
Balance—"Hawsepipe"	63	40

[1] Oceangoing.
[2] Steam and or motor; unlimited horsepower.
[3] USCG marine personnel statistics—original 3d officers.
[4] Includes 25 dual licenses (USMMA).
[5] Excludes original licenses as pilots.

TABLE 16.—DECK OFFICERS: HAWSEPIPE—NUMBER OF APPLICANTS LICENSED AND REMAINING IN THE WORK FORCE[1]

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	25	24	23	21	20	19	18	17	17	16	15	14
1974		25	24	23	21	20	19	18	17	17	16	15
1975			25	24	23	21	20	19	18	17	17	16
1976				25	24	23	21	20	19	18	17	17
1977					25	24	23	21	20	19	18	17
1978						25	24	23	21	20	19	18
1979							25	24	23	21	20	19
1980								25	24	23	21	20
1981									25	24	23	21
1982										25	24	23
1983											25	24
1984												25
Total	25	49	72	93	113	132	150	167	184	200	215	229

[1] Attrition: 5 percent annually.

TABLE 17.—ENGINE OFFICERS: HAWSEPIPE NUMBER OF APPLICANTS LICENSED AND REMAINING IN THE WORK FORCE [1]

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1973	30	29	27	26	24	23	22	21	20	19	18	17
1974		30	29	27	26	24	23	22	21	20	19	18
1975			30	29	27	26	24	23	22	21	20	19
1976				30	29	27	26	24	23	22	21	20
1977					30	29	27	26	24	23	22	21
1978						30	29	27	26	24	23	22
1979							30	29	27	26	24	23
1980								30	29	27	26	24
1981									30	29	27	26
1982										30	29	27
1983											30	29
1984												30
Total	30	59	86	112	136	159	181	202	222	241	259	276

[1] Attrition: 5 percent annually.

V. Projected Relationship Between Supply and Demand

The ability to quantify the relationship between supply and demand for officers in the various segments of the maritime industry is directly linked to the availability of reliable statistics, particularly when projecting over an eleven-year period as in the present case. As noted in Sections III and IV, very little data appropriate to this purpose has been assembled either within the government or by industry associations, particularly those serving inland waterways, off-shore exploratory drilling, and other sectors of the marine industry where ships of less than 1,000 gross tons predominate.

Previous projections of officer demand have been based only on that portion of the maritime industry comprising oceangoing ships of 1,000 gross tons or more, even though other areas of employment draw on the same officer supply. These other sectors are generating an increasing demand particularly for new officers graduating from the academies and the union schools. Nevertheless, the present lack of tangible data to quantify this increasing demand leaves only two paths for the analysis: continue previous techniques or take an arbitrary allowance from existing sources of new officers as an offset to the unknown demand. Previous analyses used the former path, but as indicated in Section IV, this analysis uses the latter as a baseline model and subsequently tests the sensitivity of the results of that model to changes in the underlying assumptions.

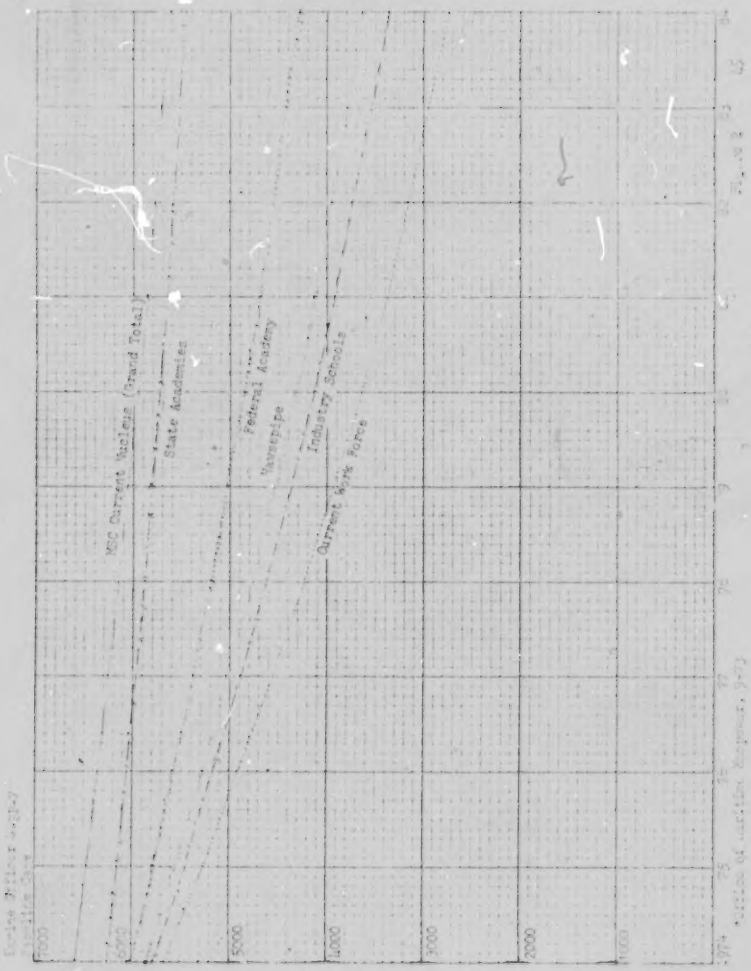
The future manpower demand that may be generated by Great Lakes shipping is sufficiently uncertain to cast doubt on any attempt to yield reliable projections. As indicated in the analysis of demand in Part III, changing preferences among the work force for use of vacation time, a gradually changing shipping season, and other factors can be expected to incline demand for new officers upward. Counter to this, however, is the declining number of Great Lakes vessels even under the impact of new (and larger deadweight) construction. At the same time, the Great Lakes Maritime Academy is approaching a regular planned output of some 30 officers each year for the Great Lakes trade. Whether the net result of these forces will balance cannot now be determined with any substantial degree of certainty.

For similar reasons the net impact of the inland waterways, in which ships of less than 1,000 gross tons constitute nearly the whole, cannot be analyzed in numerical terms. New licensing requirements of the U.S. Coast Guard have already had and can be expected to continue to have an impact on the level of required manpower and the manner in which it is provided.

The offshore exploratory drilling industry, in addition to secular growth in demand for petroleum and natural gas, has been reacting to potentially volatile changes in the economics of offshore oil production and in national and international energy policies. The industry has not yet regained stability in response to recent changes, and the prospects of future growth, while highly promising, are difficult to quantify at this point. The need for new officer-level (and other manpower) inputs is evidenced by current activities to establish a new offshore industry school at Houma, Louisiana. The results of this effort and possible changes in both academy training and industry recruitment of traditional maritime officer sources will not be known for some time.

In the baseline model, therefore, an arbitrary allowance of 15% of academy output has been made in supply to offset these excluded areas of demand. The resulting baseline projections are derived from the same premises detailed in the earlier Report to the Subcommittee as adjusted in Sections III and IV. The results are shown graphically in Figures 1 and 2.

Navy
Marine Corps
Air Force
Army
Navy
Marine Corps
Air Force
Army
Navy
Marine Corps
Air Force
Army


MSC Current Vacancy (Grand Total)
State Academies
Federal Academy
Navaltype
Industry Schools
Current Work Force
7000
6000
5000
4000
3000
2000
1000
Fiscal Year
Number of Junior Engineers Req'd

Tables 18 and 19 show that demand for deck and engine officers generated by the active fleet of oceangoing ships 1,000 gross tons and over will continue to decline through 1976. At that point the number of jobs is projected to begin increasing as the last of the unconverted World War II-vintage ships are phased out and the cumulative impact of the Merchant Marine Act of 1970 begins to be felt. Since withdrawal of older vessels is proceeding at a somewhat slower rate than anticipated in the 1970 report, the low point of demand is not reached until 1976 rather than 1974, as expected earlier. Overall levels of demand are somewhat below the levels previously anticipated, although the assumed ratios of men per billet are also above those used in the 1970 report and billet counts are now based on more detailed information.

TABLE 58.—DECK OFFICER SUPPLY/DEMAND RATIOS, 1974-84 (BASELINE CASE)[1]

	Supply	Demand	Ratio
1974	6,360	5,542	1.15
1975	6,152	5,351	1.15
1976	5,956	5,332	1.12
1977	5,780	5,434	1.06
1978	5,618	5,801	.97
1979	5,449	5,918	.92
1980	5,268	5,978	.88
1981	5,100	6,033	.85
1982	4,968	6,116	.81
1983	4,834	6,215	.78
1984	4,712	6,291	.75

[1] Office of Maritime Manpower projection, September 1973.

TABLE 59.—ENGINE OFFICER SUPPLY/DEMAND RATIOS 1974-84 (BASELINE CASE)[1]

	Supply	Demand	Ratio
1974	6,584	6,444	1.02
1975	6,459	6,204	1.04
1976	6,346	6,152	1.03
1977	6,249	6,242	1.00
1978	6,142	6,634	.93
1979	6,053	6,742	.90
1980	5,939	6,781	.88
1981	5,855	6,820	.86
1982	5,784	6,887	.84
1983	5,700	6,977	.82
1984	5,607	7,036	.80

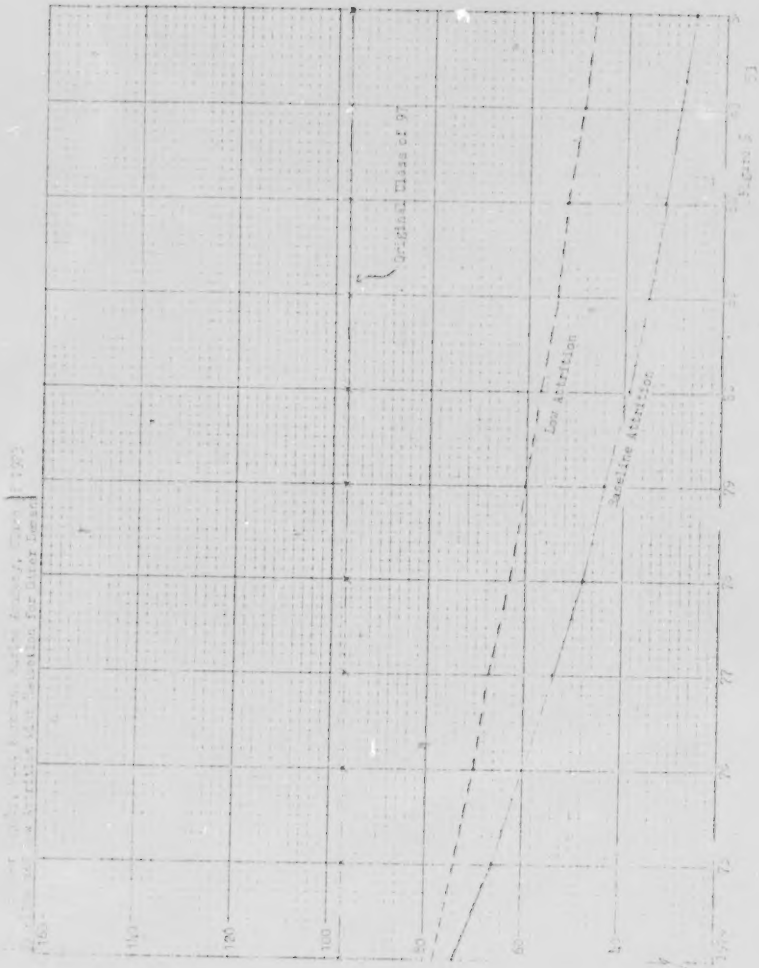
[1] Office of Maritime Manpower projection, September 1973.

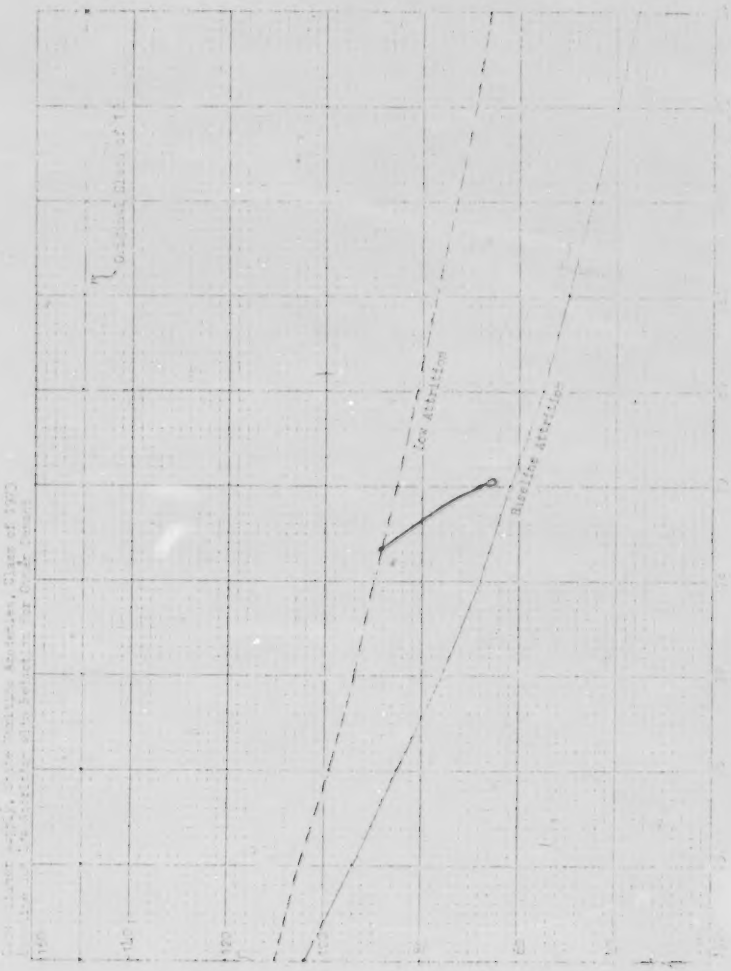
The net effect of changes evident since the 1970 Report indicates the likelihood that a shortage of both deck and engine officers will occur during the late 1970's. As described in Parts III and IV above, the projection of a shortfall of skilled manpower is based on what is considered a conservative set of assumptions regarding ocean fleet size, required men-per-billet ratios, and requirements of other obvious areas of demand. Nevertheless, the resulting supply/demand ratios by the end of 1978 are projected to have fallen to 0.97 for deck officers and 0.93 for engine officers. These ratios are expected to continue to decline so that by 1984 the supply/demand ratios would be 0.75 for deck officers and 0.80 for engine officers if current trends continued. The shortages indicated here take no account of the potential manpower requirements for activation of the 130 existing national defense reserve ships. Since program changes require a lead time of at least four years prior to actual effect, both in building ships and in training officers, the earliest impact which an immediate program change could have would occur in 1978, the year in which supply is projected to fall below demand. The relationship between demand and total supply from all sources is shown in Figure 3 for deck officers and in Figure 4 for engine officers.

Demand
Supply
7500
7000
6500
6000
5500
5000
4500

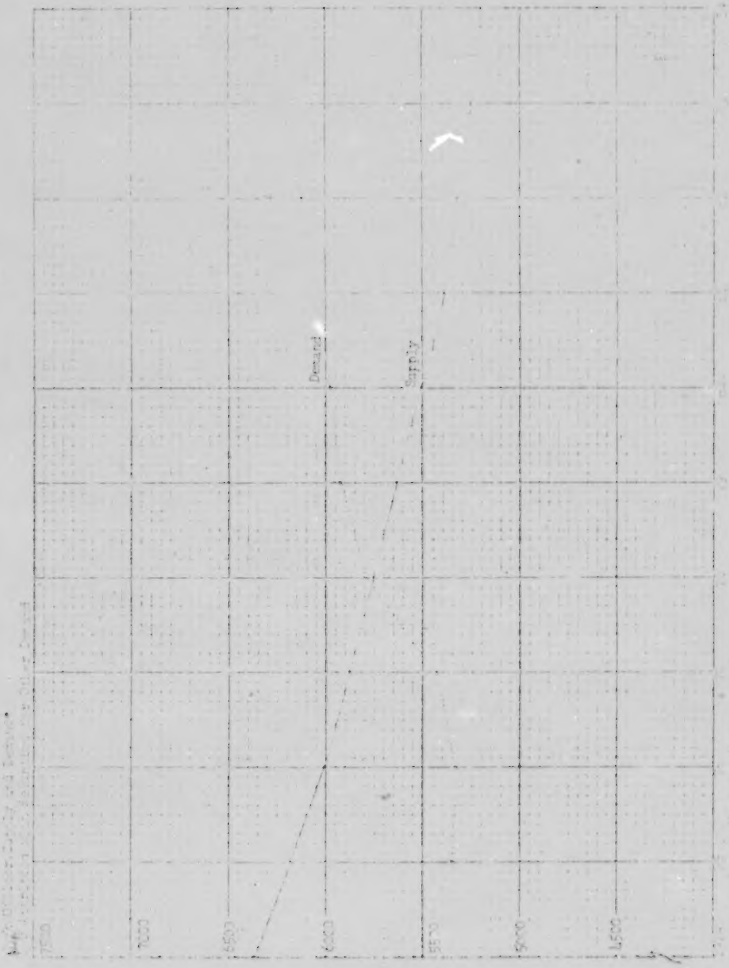
With the exceptions detailed above, the analysis to this point closely resembles, in terms of methodology, the analysis presented in the 1970 Report to the Subcommittee. The results of the current projection, however, are quite different. In the 1970 Report no shortage of officers was expected by 1982, the horizon of the demand projection, although supply and demand were rapidly coverging. However, the current study indicates (in the baseline case) a shortage well within the period of the projection, specifically in the 1978 time frame. Since the forecast of a shortage constitutes a change from earlier information and additionally since the expected timing of the shortage would call for a near-term policy response, it was considered advisable to test the sensitivity of the shortage projected in the baseline case to changes in various assumptions.

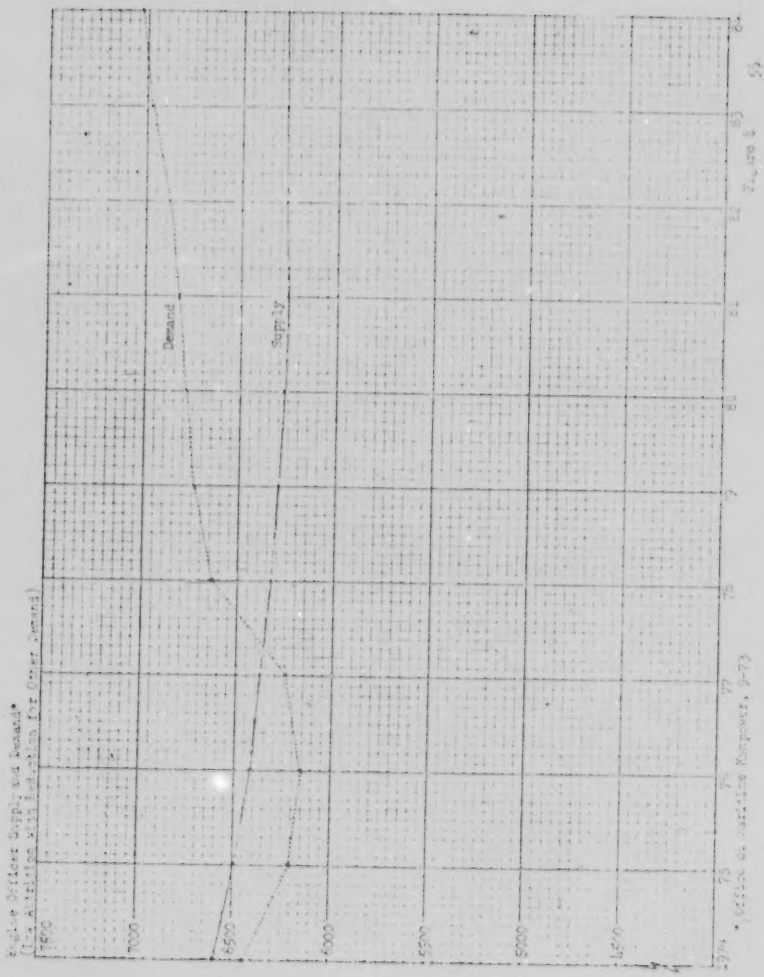
Suppose, for instance, that the attrition rates for graduates of the Federal and State Academies (and of the Calhoon School, in the case of engine officers) could be lowered. That is, what would be the impact on the expected shortage if the retention rate of new graduates in seagoing jobs could be increased? To answer this question, the baseline attrition assumptions for the academies and the Calhoon School were altered to show a higher retention. In particular, the case of "low-attrition with reduction for other demand" was defined such that annual attrition was held in each year to 5%, while baseline assumptions on reduction of supply for "other demand" were maintained. This figure is in fact quite unrealistic. Nearly a fifth of the class of 1973 would still be presumed sailing in 2003, thirty years after graduation. Figures 5 and 6 show the relationship between the size of the original class of 1973 deck officers at Kings Point and the State Academies and the sizes of the groups remaining from this class through 1984 under the two alternative attrition rates. Even with low-attrition assumptions, however, the relationship between supply and demand is virtually unchanged from the baseline case. The crossover years, in which demand first exceeds supply, remain the same for both deck and engine officers. (See Figures 7 and 8.) The size of the gap in later years, however, is reduced.


Original Class of Pt
Low Attrition
Medium Attrition

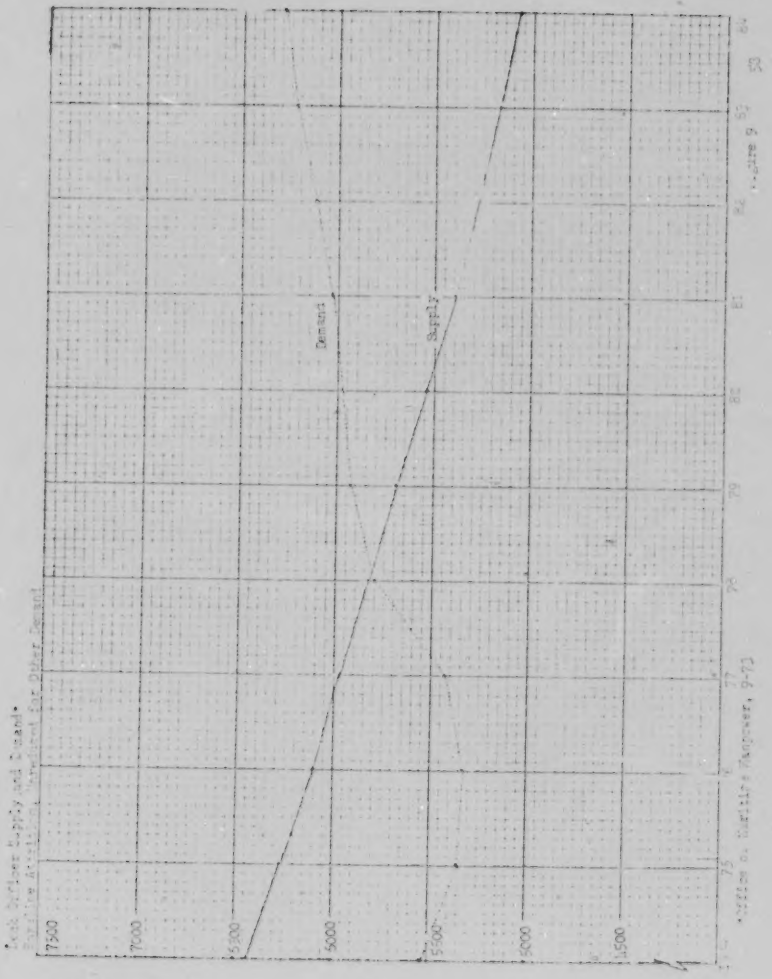

Ion Attrition
Rubidium Attrition

Another test of the baseline results was achieved by reverting to baseline attrition assumptions but without reducing academy output for other marine demand. The initial reduction of 8% of State Academy graduates for non-marine employment was maintained, but 100% of Federal Academy graduates were assumed in this case to be available for seafaring employment, as were graduates of the Calhoon School in this and all other cases. This set of assumptions yielded crossover results little different from the baseline case. (See Figures 9 and 10.) For deck officers the crossover point was pushed back one year, to 1979; for engine officers the crossover remained in 1978. The size of the gaps narrowed somewhat in later years.


Demand
Supply


Demand
Supply

A significantly more stringent test of the baseline projection was attained by applying low-attrition rules simultaneously with elimination of the allowance for other marine demand. As in the last case, the initial reduction of 8% for State Academy graduates for non-marine employment was continued. For Federal Academy and Calhoon School graduates, 100% were assumed to be available for seafaring employment. A 5% attrition rate was assumed for all sources of new officers. The impact of these test assumptions is shown in Figures 11 and 12. The crossover point is shifted back two years, to 1980, for deck officers, but is left unchanged (at 1978) for engine officers. It is not considered reasonable to expect that other areas of marine demand could be satisfied without tapping these traditional sources of new maritime officers. Furthermore, it is not believed likely that Federal or State Academy attrition rates could in the foreseeable future be reduced to levels used in this case. Hence, this is considered an unrealistic projection and quite certainly an outer boundary on manpower expectations. Yet even here there are implications for near-term public policy decisions because beginning in 1978 for deck officers and in 1977 for the engine department, the ratio of supply to demand becomes sufficiently tight that seasonal, local, or temporary bottlenecks could readily lead to manpower shortages. (See Tables 20 and 21.) It should be noted in this context that supply and demand figures used in this paper represent yearly averages and do not reflect the importance of such factors as demand surges arising from peak summer vacation periods, shortages more severe in some ratings than for a department as a whole, and the like.



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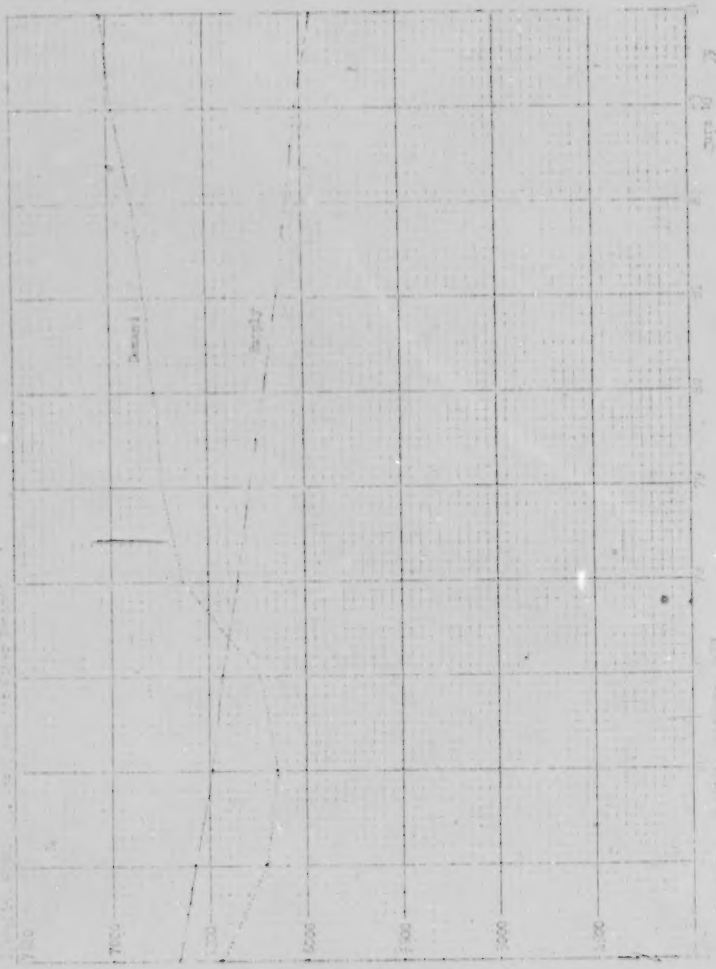


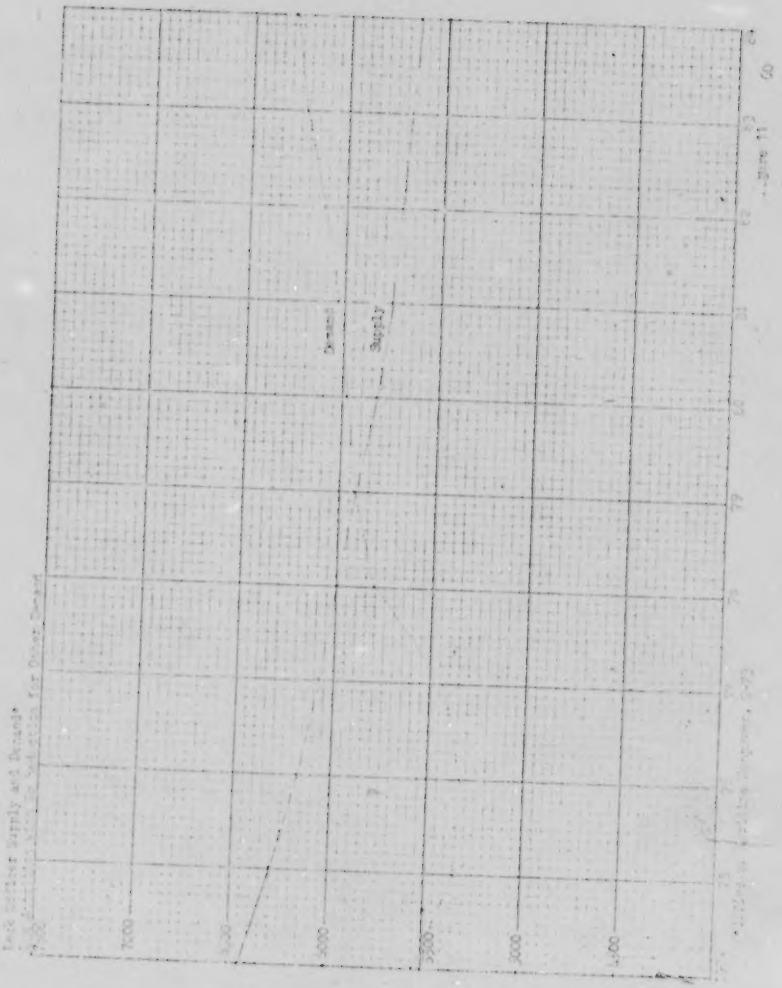


TABLE 20.—DECK OFFICER SUPPLY DEMAND RATIOS, 1974-1984 (LOW ATTRITION WITH NO REDUCTION FOR OTHER DEMAND) [1]

	Supply	Demand	Ratio
1974	6,445	5,542	1.16
1975	6,299	5,351	1.18
1976	6,169	5,332	1.16
1977	6,072	5,334	1.13
1978	5,997	5,801	1.03
1979	5,917	5,918	1.00
1980	5,826	5,978	.97
1981	5,753	6,033	.95
1982	5,710	6,116	.93
1983	5,670	6,215	.91
1984	5,644	6,291	.90

[1] Office of Maritime Manpower, September 1973.

TABLE 21.—ENGINE OFFICER SUPPLY DEMAND RATIOS, 1974-84 (LOW ATTRITION WITH NO REDUCTION FOR OTHER DEMAND) [1]

	Supply	Demand	Ratio
1974	6,672	6,444	1.04
1975	6,616	6,204	1.07
1976	6,576	6,152	1.07
1977	6,566	6,242	1.05
1978	6,556	6,634	.99
1979	6,573	6,742	.97
1980	6,567	6,781	.97
1981	6,594	6,820	.97
1982	6,636	6,887	.96
1983	6,669	6,977	.96
1984	6,693	7,036	.95

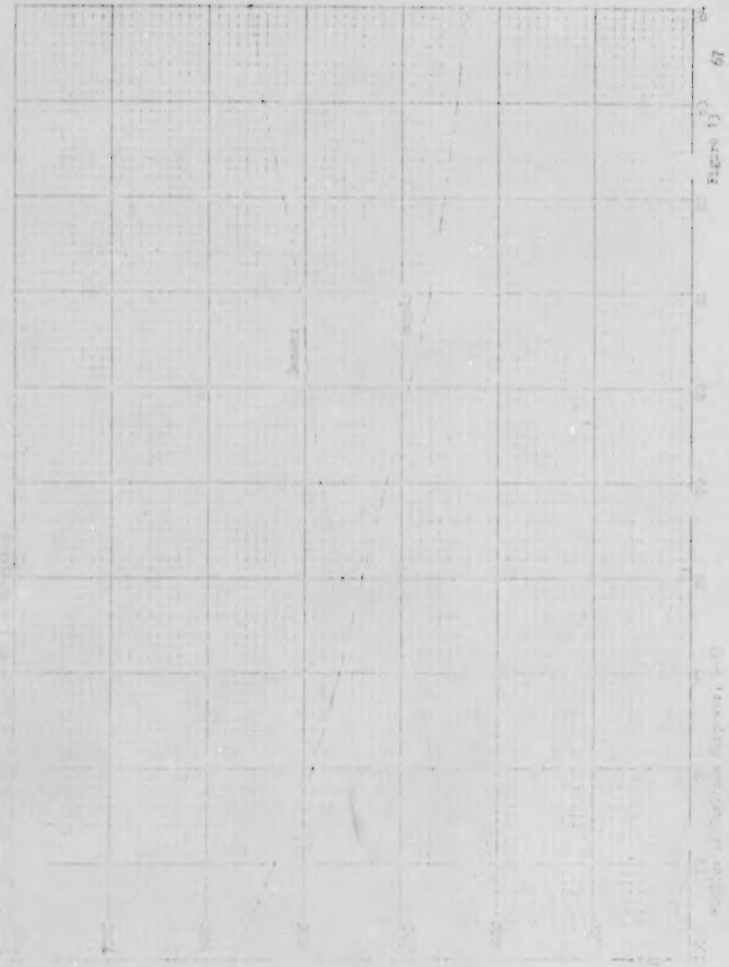
[1] Office of Maritime Manpower, September 1973.

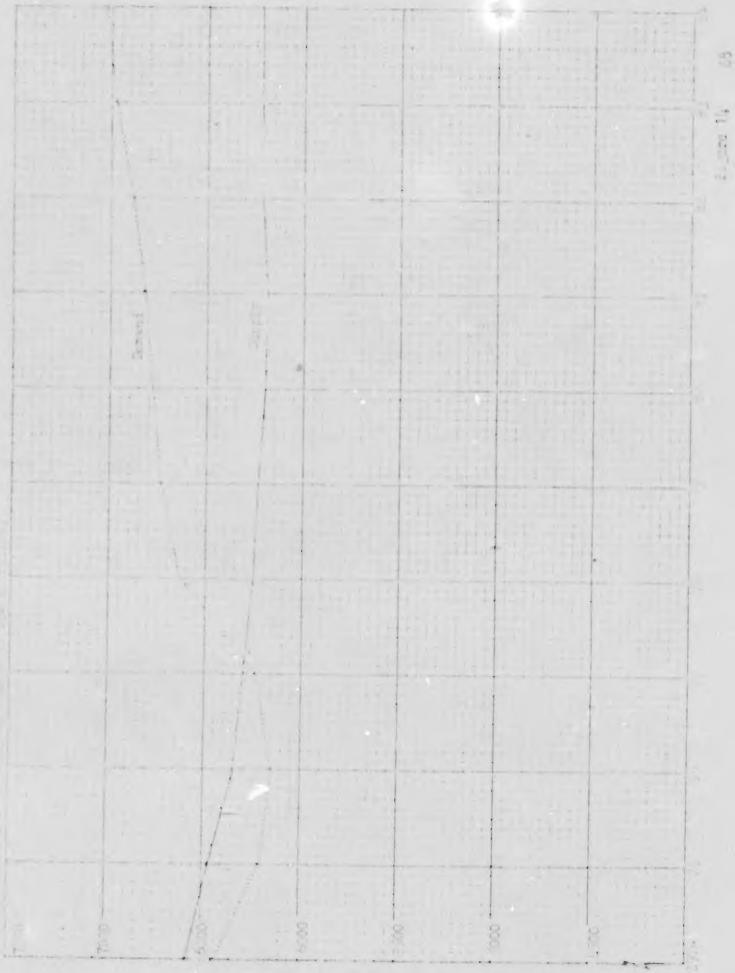
Another variation on the supply side, though unrealistic, serves to underscore the importance of the current work force. If attrition of the current private and MSC work force could be reduced to 5% annually and this effect superimposed on the case of "low attrition with reduction for other demand", discussed above, the crossover would shift to 1983 for deck officers and beyond 1984 for engine officers. The rather advanced average age of the current work force, however, renders this eventuality highly improbable.

The final adjustment made to the baseline case involved a more reasonable set of alternative assumptions and served to test the baseline projection of a shortage in yet another way while it drew the projection as closely as possible to the real world. As noted above in this Section, manpower demand is projected to continue to decline through 1976, and it would be unreasonable to expect that in the face of deteriorating demand, retention rates for new graduates could be appreciably improved. The prospect of unemployment or underemployment continuing for several years is normally sufficient to reinforce a downward trend in manpower supply, even if an eventual crossover point were visible to those deciding whether to leave the maritime work force. It is primarily for this reason that the low-attrition adjustment to the baseline case served only as a test rather than as a prediction of a likely course of events. A more coherent set of assumptions would recognize that retention rates are unlikely to improve until employment prospects become more favorable and, in the situation we are here considering, until the uptrend has begun toward the crossover point.

It was with this consideration that the final adjustment was made to the baseline case. We assumed that a mid-course change to low-attrition would be observed after demand passed its low point and started climbing again; that is, it was assumed that in 1977 (between one and two years before the crossover points) those new graduates of the Federal and State Academies and the Calhoon School who were already in the work force, as well as all new graduates, would as a group reduce their attrition rates to five percent annually. This assumption explicitly takes into account the effect of a changing supply/demand relationship on the decisions actually made by members of the work force. At the same time, the assumption of a 15% reduction from Federal and State Academy graduates to cover other areas of marine demand was maintained for the sake of realism.

The projection results that fall out of this set of assumptions are shown graphically in Figures 13 and 14. The midcourse attrition change would tend to have

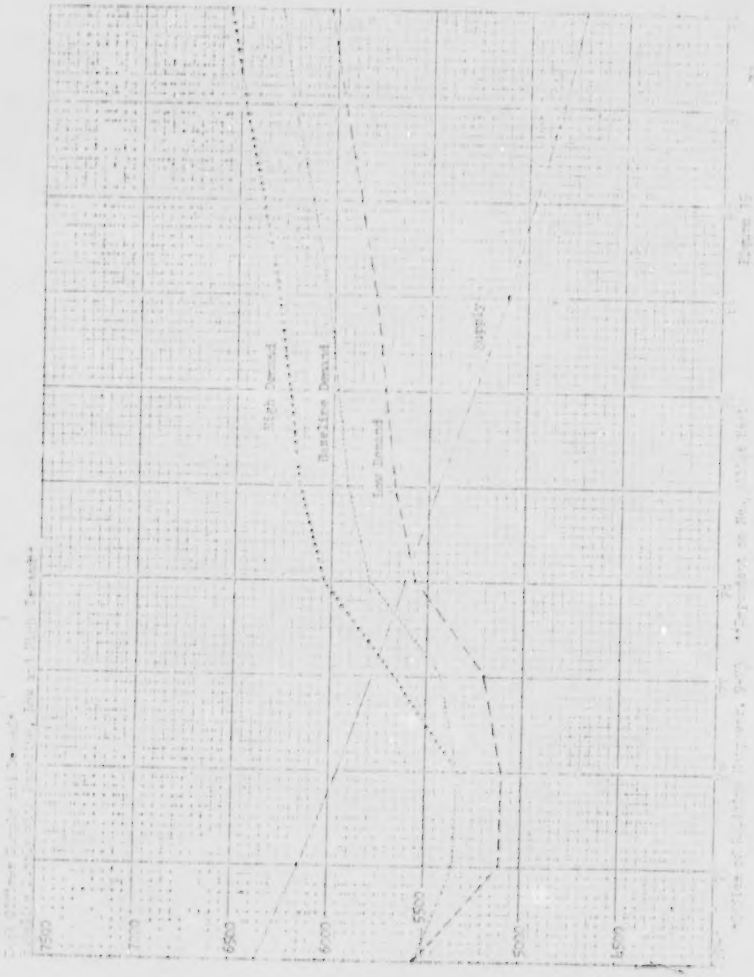




the effect of postponing the crossover date and narrowing the ensuing gap, while the reduction for other areas of demand would tend to advance the crossover date and widen the gap. The net effect of these assumptions is to leave the crossover dates unchanged for both deck and engine officers, although the final gaps are narrower than in the baseline as would be expected.

None of the cases discussed here seriously mitigate the results of the baseline projection. Three particularly important factors, however, impinge on the baseline projection and all of the variations on it treated above. One of these is the projection of fleet size. The fleet forecast used throughout this analysis is believed to be conservative, but if substantially more ships were retired during the projection period or if they were retired at a faster rate than predicted, the consequent fall in demand could eliminate a shortage of deck and engine officers. For instance if all break bulk ships in the fleet were retired during the next five years, a shortage might not develop.

A second important factor is the selection and timing of the ratios of men per billet. The factors discussed in Section III indicate the difficulty inherent in quantifying and projecting several of the inputs to this ratio. On the basis of actual experience in 1972, the ratio was 2.48 deck officers per billet and 2.81 engine officers per billet. Even though these ratios represent a conscious spreading of work in a period of over-supply, conversations with union officials indicate that a stabilized ratio between 2.4 and 2.5 could be expected to constitute an equilibrium for deck officers (and, with contract changes, possibly for engine officers). To demonstrate the sensitivity of some of the projection results to changes in the men-per-billet ratio, the baseline ratios were increased, although not to the actual levels of 1972. In fact, a ratio of 2.4 in the mid-1970's would be consistent with ratios used in some previous in-house studies. If a ratio of 2.4 were to prevail by 1978 (Tables 22 and 23), the crossover points with the baseline supply would remain unchanged for deck officers (although the subsequent gap widens) and would shift forward to 1977 for engine officers. (See Figures 15 and 16.) If, on the other hand, the maximum ratio were held to 2.2, starting in 1978 (Tables 24 and 25), crossover dates with baseline supply would slip to 1979 for deck and would remain at 1978 for engine officers. For the latter, the crossover date occurs in any year in which the ratio rises to 2.3 men per billet. It should be noted that two labor-management negotiating sessions are scheduled between 1975 and 1979. Certain fringe benefit increases, specifically pension eligibility, other retirement incentives, and vacation benefits, could raise the required ratio of men per billet. Besides this, an increase in base wages could tend to increase the required ratio to the extent it made it more attractive to take unpaid in addition to paid vacation


High Demand
Baseline Demand
Low Demand
Supply

High Demand
Baseline Demand
Low Demand
Supply

TABLE 22.—PRIVATE OCEANGOING DECK OFFICER DEMAND, 1974-84 (HIGH MEN PER BILLET RATIOS)[1]

	Number of billets	Men per billet	Demand
1974	2,626	2.0	5,252
1975	2,410	2.1	5,061
1976	2,292	2.2	5,042
1977	2,338	2.3	5,377
1978	2,396	2.4	5,750
1979	2,447	2.4	5,873
1980	2,473	2.4	5,935
1981	2,497	2.4	5,993
1982	2,533	2.4	6,079
1983	2,576	2.4	6,182
1984	2,609	2.4	6,262

[1] Office of Maritime Manpower, September 1973.

TABLE 23.—PRIVATE OCEANGOING ENGINE OFFICER DEMAND, 1974-84 (HIGH MEN PER BILLET RATIOS)[1]

	Number of billets	Men per billet	Demand
1974	3,040	2.0	6,080
1975	2,781	2.1	5,840
1976	2,631	2.2	5,788
1977	2,672	2.3	6,146
1978	2,726	2.4	6,542
1979	2,773	2.4	6,655
1980	2,790	2.4	6,696
1981	2,807	2.4	6,737
1982	2,836	2.4	6,806
1983	2,875	2.4	6,900
1984	2,901	2.4	6,962

[1] Office of Maritime Manpower, September 1973.

TABLE 24.—PRIVATE OCEANGOING DECK OFFICER DEMAND, 1974-84 (LOW MEN PER BILLET RATIOS)[1]

	Number of billets	Men per billet	Demand
1974	2,626	2.0	5,252
1975	2,410	2.0	4,820
1976	2,292	2.1	4,813
1977	2,338	2.1	4,910
1978	2,396	2.2	5,271
1979	2,447	2.2	5,383
1980	2,473	2.2	5,441
1981	2,497	2.2	5,493
1982	2,533	2.2	5,573
1983	2,576	2.2	5,667
1984	2,609	2.2	5,740

[1] Office of Maritime Manpower, September 1973.

TABLE 25.—PRIVATE OCEANGOING ENGINE OFFICER DEMAND, 1974-84 (LOW MEN PER BILLET RATIOS)[1]

	Number of billets	Men per billet	Demand
1974	3,040	2.0	8,060
1975	2,781	2.0	6,552
1976	2,631	2.1	5,562
1977	2,672	2.1	5,611
1978	2,726	2.2	5,997
1979	2,773	2.2	6,101
1980	2,790	2.2	6,138
1981	2,807	2.2	6,175
1982	2,836	2.2	6,239
1983	2,875	2.2	6,325
1984	2,901	2.2	6,382

[1] Office of Maritime Manpower, September 1973.

The third factor involves attrition of the current work force. As discussed above, the current work force constitutes the largest single component of supply in the baseline case and in all of its variations. If attrition slowed because of increasingly favorable employment opportunities or newly restricted pension eligibility rules, the sheer size of the current force to which a smaller attrition rate were applied could retard the crossovers. Of course, physical age limitations would tend to dampen or at least place an absolute boundary on any such downward attrition shifts, and it is also conceivable that other, not unlikely changes could increase the attrition of the current work force and hasten the crossover points. Substantial changes in either direction are not expected.

Mrs. SULLIVAN. Thank you very much.

I want to say that the ad hoc committee has been doing an excellent job getting information we want. We haven't had reports as yet until they are able to do some comparing of one school with another. There were so many questions that I want to ask. Maybe they have been answered in some of the questioning done at the schools themselves, but I think many of these questions should be answered too by MARAD.

Before we went any further I thought it would be a good idea to have you come up and see if we are hitting at the points that we want and really need to make a judgment and then see if you have any suggestions that the members who have been attending these investigations could ask of you.

Mr. CASEY. I am very pleased to have been asked to participate in the hearing.

Mrs. SULLIVAN. First, you mentioned about the newer ships that are coming in now needing new requirements of the officers, and then you have mentioned also that the Calhoon School—is that the one in Baltimore?

Mr. CASEY. Baltimore, yes, ma'am.

Mrs. SULLIVAN. That they are probably doing the best job of training for the industry.

Mr. CASEY. I don't believe I made that statement. I was indicating the Calhoon School was the only one currently actively producing initial licensed officers. The other schools are engaged in upgrading programs rather than producing new officers.

Mrs. SULLIVAN. Has the Federal Academy changed the type of courses it is giving in order to meet the requirements of the new ships being built?

Mr. CASEY. Yes, ma'am. The program for initial licensed deck and engine officer development and the dual license program have continued essentially the same. They have, however, added a number of elective courses which are broadening the curriculum in order to get into certain specialized areas in the maritime industry, for example, the offshore drilling industry, the inland waterways, tug and barge operations, more diesel training, additions to the curriculum of that nature to broaden the scope of the education.

Mrs. SULLIVAN. Each student is not taking the entire spectrum of courses, they are specializing. Is that what I understand you to say?

Mr. CASEY. Yes, ma'am. Initially they all take the same course in the first term. Then they specialize in either the engine department or the deck department, and their major studies from then on are in those respective departments. Kings Point also has a dual license program where an individual can train and sit for both licenses. He could after he got through be both a licensed deck officer and licensed engine officer.

Mrs. SULLIVAN. Are the students of the State academies offered the same type of courses that are given at the Merchant Marine Academy at Kings Point?

Mr. CASEY. Essentially, yes. The California school is still on a 3-year program. They intend next year, as I understand it, to go to a 4-year program. All of the other schools are on a 4-year bachelor of science program.

Mrs. SULLIVAN. And they get the full college course and then specialize in their particular area?

Mr. CASEY. Yes. Each of those State schools produce both deck and engine officers.

Mrs. SULLIVAN. The work on the ad hoc committee to date has revealed that the present cost to the Federal Government of a student's education at Kings Point is more than $33,000, and yet none of its graduates have active duty service obligations as do the graduates of the Federal service academies. In fact only about one half of the 1973 graduates of Kings Point went to sea.

There are three questions I want to ask. Let me read them and then we will answer each one.

1. How can this expenditure of Federal funds be justified?

2. What return do these graduates make to the Federal Government for their education?

3. What kind of obligation do the graduates of Kings Point and of the six State maritime academies have to serve in the U.S. merchant marine?

Let's take the first one. How can the expenditure of the Federal funds be justified when so few of them really go to sea?

Mr. CASEY. I would like to introduce the answer to the questions by saying that over the past few years there has been an oversupply of officer personnel in respect to available jobs. If you look back to 1969, for example, you would find that 94.3 percent of the graduates of Kings Point went to sea, and that was a period when the supply and demand situation was in much better balance.

So I believe that the lower percentage in recent years is as a result of the conditions of employment in the industry rather than the desire of the individual graduate.

To answer your question more specifically as to why the Federal Government should fund education for the merchant marine, I believe that the principal answer to that is the national interest consideration of the American merchant marine. It has obviously a national security consideration which is important. Also as a matter of policy the Merchant Marine Act itself in the policy statement says we will have a fully trained and efficient citizen merchant marine complement.

Mrs. SULLIVAN. Second, what return do these graduates make to the Federal Government for their education?

Mr. CASEY. There is no monetary return. As you indicated, the cost of the education is somewhere around $31,000 to $33,000. They do sign a moral obligation when they enter the Academy. Also they must join the Naval Reserve if a Naval Reserve commission is offered. So there are those obligations.

Mrs. SULLIVAN. If it is not offered, they don't have to volunteer to join the reserves?

Mr. CASEY. I believe it is a true statement that most of the Kings Point graduates become Naval Reserve officers on graduation.

Mrs. SULLIVAN. You said back in a certain date in the sixties the number of graduates were meeting the requirements of the industry for officers, et cetera. With the great decline of the number of ships at sea, did the academies do any declining in the training of their enrollment?

Mr. CASEY. Not at Kings Point, Madam Chairman. The level of graduates from Kings Point hasn't changed appreciably over the last 10 or 15 years. There have been about 200 graduates. During the Vietnam buildup when the State academies increased their enrollment, Kings Point was kept at its normal level. So it has remained at essentially the same level throughout.

Mrs. SULLIVAN. How does the education a young man would get at Kings Point compare with some of the State academies who give the full course?

Mr. CASEY. I am probably partial in answering that question, Madam Chairman. My son went to Kings Point the first year and didn't make it. I am sure that was a matter of motivation rather than capacity. He left there and went to Maine Maritime Academy. I can answer that he felt he got as good an education at Maine Maritime Academy as he would have received if he stayed at Kings Point. I think in the course of study there is not too much choice.

Mrs. SULLIVAN. In other words, the caliber of the education of a State academy is high and good to your knowledge?

Mr. CASEY. Yes, ma'am.

Mrs. SULLIVAN. What kind of obligation do the graduates of Kings Point and the six State maritime academies have to serve in the U.S. merchant marine?

Mr. CASEY. The Kings Point enrollee signs a moral obligation that he will go to sea for 3 or 4 years after he graduates. That is not a legally binding obligation. He does, as I say, have to accept the commission in the Naval Reserve upon graduation, and if he wants to maintain that commission he has to enter into certain activities which would keep that commission in force.

I think you asked also about the States. The State situation is the same as far as the Naval Reserve is concerned, but to the best of my knowledge they do not sign any moral obligation to go to sea when they graduate.

Mrs. SULLIVAN. The State academies are usually stationed close to a port where there would be more inducement for them to go to sea and to come to the Academy for that kind of training.

Mr. CASEY. To answer the first part of your question, the schools are all in ports because one of the major vehicles of their training is a school ship which we provide. So all of those schools are on the sea coast. Most of the State schools do have a much bigger predominance of their home State in their student complement. Of course, the Federal Academy is nationwide.

Mrs. SULLIVAN. May I say to the members I do do have a lot of questions to ask, but if you want to interrupt and ask further questions along the line, I will be happy to yield. Is that all right?

Mr. GOODLING. There is one question you asked which has been in my mind for a long time. Why should we not require graduates

of Kings Point to serve a certain length of time after they graduate similar to our service academies?

Mr. CASEY. Congressman, one thing is that you would have to be able to guarantee jobs for such an obligation. The situation over the past few years is that we have not really had enough seagoing jobs to make such a guarantee.

Another thing I think that is very significant is that that would in effect be a step toward nationalizing the American merchant marine. To have an obligation of the student to participate would in my opinion be at least a step in the direction of nationalizing the industry. I don't believe that is the direction we would like to see us move in.

Mr. GOODLING. You say it costs approximately $33,000 to graduate a boy from Kings Point?

Mr. CASEY. Yes, about $7,000 or $8,000 a year.

Mr. GOODLING. To me it just doesn't make sense the Federal Government spends $33,000 to educate a boy and that that boy doesn't have any obligation to the Federal Government. You understand, Madam Chairman, in the Maritime Academies the boys pay to attend. At Kings Point we pay them to go there.

You also asked about curriculum. From what I have been able to observe on our trips to the Maritime Academies, I believe they have just as good a course, just as good equipment and sometimes maybe even better than at Kings Point. I don't know if the others agree with me or not. That was my observation. I certainly can't see why we should educate any boy to the tune of $33,000 and he doesn't have any obligation at all to the Federal Government.

Mrs. SULLIVAN. Did you ever consider having them repay their obligation to the Navy after they finish?

Mr. CASEY. Not to my knowledge. As a matter of fact even during World War I and World War II the manning of merchant ships was a voluntary situation. Nobody was ever drafted. Even the ships operated under the General Agency agreement were voluntarily manned. We never had a conscription or a draft to enroll merchant marine personnel.

Mrs. SULLIVAN. Mr. Forsythe.

Mr. FORSYTHE. Madam Chairman, I sympathize with the point that both you and Mr. Goodling are raising about obligation. It seems to me, in my observation, that going to sea raises the problems that have been mentioned. But I am wondering, since we are, apparently, in our Merchant Marine Academy, broadening the scope of the curriculum to a full 4-year course, and considering the need in other areas of government service and in other areas of our whole maritime complex, as we proceed down through the years, it is going to be demanding and very important. I am wondering if there is an area of obligation to not necessarily be on a ship at sea but a career that would support the whole concept that could be in some way worked into this concept of getting something back to the Government for its investment.

Mrs. SULLIVAN. In other words, we are training these boys to be experts in this line and this is why I was asking about a comparison with the type and quality of education of the State academies versus the Federal. There is quite a difference in the cost of the education. We are training these people for the industry really because there

is no Federal service obligation, there is nothing equitable in which they could serve except upon Navy ships to repay the Federal Government for their education. We insist that doctors serve so many years in order to get the medical education, and this is the only group that has no obligation at all. While I realize, and I think we all recognize, the great need to keep our ships at sea with the very finest officers we can find, there has been pressure for a while to give higher educational courses and higher degrees at the Merchant Marine Academy. I for one can't agree that we should do this at the taxpayer's expense. I think the more education they get, the more degrees they get, the better officers they will be, but why should I pay for it or any of us pay for it when it is going to help them and not our Government. It will help the industry but it is helping the individual more than anything, and these individuals as they finish school and are fortunate enough to go to sea are paid very adequate wages are they not?

Mr. CASEY. Yes.

Mrs. SULLIVAN. Somewhere around $20,000. Am I right?

Mr. CASEY. That may be on the high side. It is somewhere between $15,000 and $20,000 anyway.

Mrs. SULLIVAN. But it is a pretty good starting salary.

Mr. CASEY. That is right. It is very attractive.

If I might, I think Congressman Forsythe raised a very important point. That is, we talk in terms of going to sea and so forth. I believe it is also important there be a trained merchant marine cadre personnel for the inland waterway, the Great Lakes and even the offshore drilling industries. These are all marine-related activities. So I think if you just look at the statistics of those people who go to deep sea employment, it is not a full picture. I still think the Maritime Administration has a direct interest in the domestic shipping industry, for example, and that one of our obligations is to provide trained personnel for that industry.

Mrs. SULLIVAN. The thing that struck me was when the number of our ships declined we still trained and enrolled as many students in the academies as when the demand was greater. Am I right?

Mr. CASEY. That is right. We kept the Kings Point complement at a fairly level scale over a very long period of time. We have not increased it in times of shortages nor have we reduced it in times of oversupply. It has been kept at a level source of new officers.

Mrs. SULLIVAN. Mr. Rooney.

Mr. ROONEY. How many students graduate this year from Kings Point?

Mr. CASEY. I believe the number was 182.

Mr. ROONEY. Of that number how many started in that class of 1974? In other words, what is the attrition rate?

Mr. CASEY. The attrition rate for the class of 1974 was high. I don't know exactly the number that started, but I think it would be somewhere around 347 which would give you an attrition rate in that course of somewhere up in the high forties.

Mr. ROONEY. To what do you attribute that?

Mr. CASEY. It is an unusual situation. The attrition rate at Kings Point for the period from 1968 to 1973, the previous 5 years, was 36.9 percent. Why there was a big attrition rate for the class of 1974 I am not sure. It may have had something to do with the draft situation that occurred during the course of their study, and that of course

was one reason that people went to the Merchant Marine Academy, the draft. I don't know specifically what the answer to that question is.

Mr. ROONEY. How many of the 1974 graduating class will go to sea?

Mr. CASEY. I don't have any statistics yet. All I can quote is what was in yesterday's paper in connection with the Kings Point graduation which indicated that out of 71 people that had already selected jobs I think the figure was 8 went to some service, Navy, Army, Marine Corps; 40 went to deep sea; 15 went to inland waterways; 5 went to offshore drilling; and 3 to Great Lakes. So all of those people went either to the service or to marine actual seagoing type employment. That is only 71 out of the class of 182, and there are no statistics I know of available yet as to what the others will do.

Sometimes, Congressman, when somebody gets through Kings Point after 4 years they don't immediately accept a job. They would like to take some time off before they actually go to work. It is probably towards the middle and end of the summer before any of those statistics will be available.

Mr. ROONEY. Thank you.

Mrs. SULLIVAN. Are you acquainted with the demand for jobs in the field both at sea and within the industry where they do desk work or something of that sort?

Mr. CASEY. You mean numbers of job offers?

Mrs. SULLIVAN. Yes.

Mr. CASEY. I don't have any statistics, Madam Chairman, with respect to what offers have been made to current graduates. Of course, practically all of the companies do visit Kings Point and the State schools at some time during the year with recruitment efforts in mind. I don't know exactly how many jobs have been offered.

Mrs. SULLIVAN. They don't report to MARAD or anyone within MARAD that we need so many officers at sea, we need so many engineers in plants or at desk work?

Mr. CASEY. After the fact we generally get the statistics relative to what job offers have been made to the graduates, but we don't during the course of their study or recruitment efforts.

Mr. FORSYTHE. As I recall, I think in Texas they indicated five offers for every graduate.

Mrs. SULLIVAN. That is one I did see.

Getting back to that, why is the annual cost per student at Kings Point approximately $8,200 while the annual cost per student at Fort Schuyler, a comparable institution in the same vicinity is about $4,500, about 17 percent of which is borne by the Federal Government? Can you or your colleague answer that?

I might say these are some of the questions that are being put to us which we can't answer. If the courses in the schools are comparable and the quality of the students they turn out is comparable then why the big difference in cost?

Mr. CASEY. According to our figures the cost per graduate at New York, according to my record, was $32,100.

Mrs. SULLIVAN. You mean Kings Point?

Mr. CASEY. No, the New York State Academy.

Mrs. SULLIVAN. These are the figures that were given to the ad hoc committee. These are the ones for Fort Schuyler we have.

Mr. CASEY. We indicate that the Federal cost per graduate is $4,800. I think this is fairly close to the number you have.

Mrs. SULLIVAN. Seventeen percent of the costs of the Fort Schuyler students is borne by the Federal Government, but the cost that was given to us was $4,500 per student annually.

Mr. CASEY. The figures I have, Madam Chairman, 17 percent is fairly close. What I have—and this is based on 1973—at the New York State Academy based on 124 graduates the total cost Federal, State, and all funding sources was $32,100, of which the Federal cost was $4,800, which would be about 15 percent, fairly close to your 17 percent. But the total cost according to the figures we have are substantially higher than the total cost you just indicated.

Mrs. SULLIVAN. That makes Kings Point and Fort Schuyler comparable almost.

Mr. CASEY. Essentially so, yes.

Mrs. SULLIVAN. We are going back, and I wish you would go back to those figures, too, and see if there is something wrong because the committee hasn't been given that kind of a figure.

Mr. CASEY. Right.

Mrs. SULLIVAN. What did you say the Federal portion was?

Mr. CASEY. $32,100 is the total cost and $4,800 of that $32,100 was the Federal input.

Mrs. SULLIVAN. I can't ask you what I want to ask if the figures are comparable.

In what specific way does the military training offered to students at Kings Point and the State academies relate to the duties of either a deck or engineering officer aboard a commercial vessel? A thorough grounding in discipline is obviously an essential element of any system of maritime education, but is military training the best and most realistic type of preparation for the responsibilities of an officer on a merchant ship?

Mr. CASEY. In response to the first part of your question as to the relationship between the Navy and the merchant marine, there is a lot of coordination between the two services. We are trying to work very closely with Navy operationally. We have recently created a Naval Reserve program for merchant marine officers even after they are graduated and at sea who would participate in a Naval Reserve program to keep themselves familiar with what is going on in the Navy. In times of emergency, of course, the merchant marine works very closely with the Navy.

As far as the military type training at a maritime academy, I believe that the discipline type of training is very appropriate for people who are entering the merchant marine. It is a disciplined service. It is not the same relationship as defined in the armed services between officers and enlisted men, for example, but there are gradations of licensed and unlicensed. So I believe the type of military training they get at the academy is very appropriate for that type of life.

Mrs. SULLIVAN. Should a merchant ship be attacked they would have to know how to fight back. I have no idea how they are equipped to fight back if they are attacked.

Mr. CASEY. Generally they don't carry, at least in peacetime they don't carry armament. They did carry armament during the

Second World War. Troop carriers has at least antiaircraft guns, and they were manned with Navy people, not merchant marine.

Mrs. SULLIVAN. Every merchant ship had an escort ship, didn't it?

Mr. CASEY. For the most part they traveled in convoys which were escorted. The faster ships could make it on their own, but generally speaking during World War II at least they traveled in convoy with Navy escort.

Mrs. SULLIVAN. Are there any questions on that subject?

Mr. ROONEY. I think we did explore that with the cadets at Kings Point, and they felt they had a definite responsibility aboard ship for their fellow man and for their fellow passengers, and they thought they did need some kind of military training. They thought it would fit into their curriculum.

But at all the schools we visited military training is at a low key. I think the superintendents of the various schools try to tell the students, the cadets, they are not being trained as officers in the U.S. Navy but they are trained as maritime officers, and consequently, they do have military training at low key.

Mrs. SULLIVAN. They would have to be disciplined for other things.

Mr. FORSYTHE. I think it is apparent from the standpoint of the licensed and unlicensed but it is truly pretty much a military structure the way they drill and other arrangements. It seems to me it is low key but within the framework of a military approach.

Mrs. SULLIVAN. I think the discipline part is a necessary part. If you can't keep discipline on ship, you are out of business.

What I would like to ask, as we get on to the next question, how many officers come up from the ranks, what proportion? What incentive would a merchant marine person have to study and qualify and sit for the licenses of various officers on the ship? Can you tell us the proportion?

Mr. CASEY. In answer to your first question of the number, it varies rather significantly, Madam Chairman, from year to year. For purposes of this study, for example, on a continuing basis we have estimated that there would be 30 engine officers come through the hawsepipe each year and 25 deck officers. In 1973 the figure was substantially higher—60 engine officers and 40 deck officers obtained their licenses through the hawsepipe.

As to the motivation I think probably money is undoubtedly a strong motivation and better accommodations aboard ship. Being able to eat in the officer's mess rather than the unlicensed mess is undoubtedly a motivation. Just plain ambition and status I think is undoubtedly a motivation.

Mrs. SULLIVAN. You say some 30, not 30 percent?

Mr. CASEY. Thirty people is what we have projected.

Mrs. SULLIVAN. When you compare that with the number of graduates at Kings Point who were hired to go to sea it is almost the same, isn't it, as those who were motivated to move forward and sit for the license in order to get promotions, about the same as those who come through the Academy?

Mr. CASEY. In terms of numbers?

Mrs. SULLIVAN. Yes.

Mr. CASEY. No. At Kings Point we anticipate there will be somewhere in the neighborhood of 200 graduates a year, which would break

down fairly evenly as between deck and engine officers, which would be somewhat less than 100 engine and 100 deck officers per year. Even assuming that perhaps 15 percent of those don't go to sea initially, you would still be up around 85 deck and 85 engine officers coming out of Kings Point per year as compared with the 25 deck and 30 engine officers through the hawsepipe for the purposes of this study. As I indicated, the study projections are pretty much based on conjecture but are the best estimates we can make of what will happen in the future.

Mrs. SULLIVAN. The man has every opportunity to work for promotion and a better job while he is at sea if he wants to do so?

Mr. CASEY. Yes, Madam Chairman. In response to that, let me say one of the conclusions that comes from this study is, because of the indefiniteness and the number of variables involved in the study, we are recommending that if in fact a shortage results that the most ready source of new officers would be through the hawsepipe. It's very similar to what you have in terms of national emergency, where officers training schools take people from the enlisted ranks, the higher grade people, who already have a basic knowledge of the sea and have a lot of the basic information that they would need for that type of training. They can be made into officers in a much shorter time than it would take to run them through either the State or Federal academies or an initial licensed program of a high school graduate. So there is a pool of people in the merchant marine at the moment who are potential officer candidates.

Mrs. SULLIVAN. During the time they are off ships, they can go to specialized schools for specialized training, I know, for instance, engineering, to learn the latest type of engines, and so forth, that are being put into the ships.

Mr. CASEY. That is right, Madam Chairman. That is one of the reasons that we had the higher level of hawsepipe people this past year because, with the shortage of jobs and more time ashore, they have more opportunity to participate in that type of training to upgrade themselves during their free time. In the future we have stepped down somewhat the number of people coming through the hawsepipe because of the supply/demand relationship, changing over the future from what it was over the last few years.

Mr. ROONEY. Would you yield at that point?

Mrs. SULLIVAN. Sure.

Mr. ROONEY. There has been some talk in our travels around the country that some of these schools, including Kings Point, want to have advanced degree programs. Do you support such a program?

Mr. CASEY. No, I am inclined to agree with the statement made by Madam Chairman earlier, that I think our obligation in terms of the merchant marine is to train officers. When they get into the higher education type of training, that should not be federally funded.

Mr. ROONEY. Then there would be no Federal incentives for such advanced training.

Mr. CASEY. I don't know of any, Congressman, where you need anything more to become a very qualified officer than what we provide already, plus what they would do through upgrading themselves after they have entered the industry.

Mrs. SULLIVAN. Here is the question that is put often: How can we justify support of a Federal Merchant Marine Academy where students attend free of charge in addition to receiving almost a $3,000 stipend during the sea term when each student at a State academy pays between $2,000 and $3,000 a year for his education, in addition to the substantial State support and investment in these institutions?

Mr. CASEY. One answer to that question, Madam Chairman, is the degree of control that the Federal Government has at the Federal Academy. We, in fact, control the Federal Academy. When I indicated earlier the relative comparability of the training received at State schools versus the Federal schools, I think to some extent—and I could not really prove this point—there is a certain degree of transferability of the training that is generated and received in the Federal Academy to the State academies.

Mrs. SULLIVAN. What did you say, there is a degree of what?

Mr. CASEY. Of transferability. If we changed the curriculum of the Federal Academy, I think that has a tendency at least of having the State schools follow suit.

Mrs. SULLIVAN. In other words, we set a measuring stick that the States would have to come up to in order to turn out quality graduates. Is that what you mean?

Mr. CASEY. That is the point I was making. This is the position I feel. I presume you will get different opinions on that subject. We like to feel that the Federal Maritime Academy is a standard-setting type of curriculum and that it does improve the caliber of the State schools by setting that standard at the Federal Academy.

Mrs. SULLIVAN. I am sure you have something to say about this, Mr. Forsythe.

Mr. FORSYTHE. At that point, from what I have seen as we traveled—and Mr. Goodling referred to it—in some ways we think of the State academies as at least being equal and even maybe a little better. There was your own indication with your son. Because of this question of quality of the caliber of the product through your curriculum, it seems to me that the motivation here is going to come from two sources. That is, the licensing requirements of the Government and the industry in technical requirements as we move into more and more of a technical stream. I am not sure that the Federal Government, with all apologies, is necessarily the leader in this kind of a field. It seems to me most of this can come from other sources.

Mr. CASEY. I didn't expect to get unanimous concurrence with that observation.

Mr. GOODLING. Madam Chairman, I asked the same question or practically the same question you asked. The chairman got a red face. He thought I was hitting below the belt. I asked the admiral, "How can you justify having the Federal Government pay for all of your students here and right across the bay at Fort Schuyler those boys are paying to go to school."

Mrs. SULLIVAN. What does Fort Schuyler look like in comparison to Kings Point?

Mr. GOODLING. You have to remember that Kings Point was formerly a Walter Chrysler estate. I raised that question also. They have an immense mansion where many of their offices are located.

Mrs. SULLIVAN. Could it be the overhead of the elaborate setup that would cost the difference between the $32,000 and $33,000 education? I can't compare it to Fort Schuyler because you say that that cost is $32,100. I can hardly believe it.

Mr. GOODLING. I don't recall anything like that.

Mr. ROONEY. For the record, I think you ought to clarify that and come up with some new figures on State schools versus Kings Point because our figures indicate that it's much, much higher at Kings Point.

Mr. CASEY. Yes, Congressman. We will do that.

[The information follows:]

COST PER GRADUATE FOR CLASS OF 1973

Based on additional information furnished by the State schools we have recomputed the cost per graduate for the Class of 1973 for each State school and listed the revised figures [1] (see note) in the table below:

School	Estimated total cost per graduate [2]	Estimated Federal cost per graduate [3]
U.S. Merchant Marine Academy	$31,100	$31,100
State marine schools:		
California	24,644	7,377
Maine	23,711	4,630
Massachusetts	(4)	(4)
Michigan	[6] 39,473	[6] 18,859
New York	[5] 27,274	5,049
Texas	[6] 49,684	[6] 12,926

[1] Includes Federal, State, and student funds.
[2] Includes Federal funds for maintenance and repair of the schoolships, grants, and student allowances.
[3] The school did not have a graduating class in 1973 due to a change in curriculum from a 3- to 4-year program.
[4] High cost due to a small graduating class.
[5] This figure is lower than our original estimate of $32,100 because operating costs for the school had to be revised to only reflect costs attributable to the undergraduate program.

Note.—The figures provided herein update to July 1974, the February 1974 figures given in testimony. It should also be pointed out that an annual cost per student cannot be used to estimate a total cost per graduate over a 4-year period. For example, the estimated annual cost per student at the State school in New York in fiscal year 1973 was about $5,000. However, this figure could not be multiplied by 4 to arrive at a total cost per graduate because it would not reflect attrition. The cost of those students dropping out would be lost.

Mr. ROONEY. As I say, Madam Chairman, of the schools that we visited, some of the State schools had certain facilities that are far better than they are at Kings Point. Kings Point is lacking, for instance, a gymnasium of any kind of consequence. I think it should be upgraded. They certainly don't have the facilities as far as recreation, such as a swimming pool, which I think should be upgraded in comparison to, let's say, the Massachusetts Maritime Academy. They have beautiful, new dormitories. They have a fieldhouse, second to none of some of the colleges I have visited. So the State school students do have in many areas certain advantages that the cadets at Kings Point do not have.

Mr. CASEY. That is right, sir. The athletic facilities at Kings Point are deplorable. In this year's budget we do have money to improve the gymnasium and to put better facilities on the athletic field. But they are in a very sad state.

Mr. ROONEY. As I recall, the gymnasium doesn't need any improvement but it's very difficult for me to comprehend building a gymnasium without any kind of locker facilities.

Mr. CASEY. It's a combination drill hall and gymnasium. It really doesn't have much in the way of athletic facilities, such as handball courts and things you could find in any school. Particularly, this is a school where the students are so confined that they really need better athletic facilities than they do at the normal college.

Mrs. SULLIVAN. They don't have football teams and things of that sort. What are you talking about is the regular type of physical education that they should have in every school?

Mr. ROONEY. Kings Point does have a football team.

Mrs. SULLIVAN. Whom do they play?

Mr. ROONEY. They play Lehigh University.

Mrs. SULLIVAN. They are not making anything big out of it.

Mr. CASEY. Not like it was during the war.

Mr. ROONEY. They are trying to schedule schools that are closer to the campus because of the cost of travel.

Mr. FORSYTHE. Madam Chairman, you referred to the comparison with Fort Schuyler. I was wondering if there are also figures on the other academies that we ought to also be looking at in the same relationship and compare that to the information that we have had. I think we ought to have the whole picture.

Mrs. SULLIVAN. Do you have that?

Mr. CASEY. Yes, I do. These are all based on 1973 graduates and costs. For the California school, which is a 3-year course, we have $23,300. For the Maine school we have $21,500. This is total cost, including State, Federal, and student funds.

Mrs. SULLIVAN. That is the total cost for 4 years in Maine and 3 years in California?

Mr. CASEY. We don't have a figure for Massachusetts because they didn't have a graduating class in 1973. They went from a 3-year curriculum to a 4-year curriculum. The Michigan figure is $39,700 per graduate. The reason for that, of course, is the very low number of graduates. It's a fixed cost. New York is $32,100 and Texas is $49,500, again spread over a relatively smaller graduating class.

Mrs. SULLIVAN. Is that Galveston?

Mr. CASEY. That is at Galveston, yes. Correspondingly speaking, the Federal input to those figures at Kings Point is $31,100, 100 percent federally funded. In California, out of the $23,400, $7,300 is the Federal increment.

Mr. GOODLING. You mentioned Galveston. It's going to be one of the better ones, I would predict. It's associated directly with Texas A. & M. They are small at this time, but they are going to grow.

Mrs. SULLIVAN. They are just starting.

Mr. FORSYTHE. Is the schoolship the big variable that may be in this question of figures involved in this?

Mr. CASEY. It may very well be. I have not seen the responses to the questions from the other schools except Maine. I did see the Maine responses. They completely disregard the schoolship.

Mr. FORSYTHE. In those figures?

Mr. CASEY. No, not in these figures, but in the figures that were submitted to the subcommittee in response to the 60-some questions. When I reviewed the Maine maritime responses, the schoolship was not included in any of those figures.

That is a substantial piece of the money when you consider the maintenance on those ships. We budgeted $1.5 million to maintain those six ships in fiscal year 1975. It may very well be that some of the differences we have are in relation to the schoolships. But I think it's a necessary and very appropriate element of the cost.

Mr. FORSYTHE. That does lead to another area that has been of some concern to me, which is the relative merit of the schoolship as compared to the method used at Kings Point for at-sea training which, when we come down to the final resolution, I think should be an area of analysis, recognizing that the availability of the ship situation is something that will have to be faced not too far down the road. We are not going to be able to pull available ships out from mothballs. Where this whole thing is going to go, it would seem to me, is a very important concern as we look down the road ahead.

Mrs. SULLIVAN. Does Kings Point have a schoolship?

Mr. FORSYTHE. No.

Mr. CASEY. They go as cadets on board subsidized ships for 1 year out of a 4-year course.

Mrs. SULLIVAN. Is their $3,000 stipend while at sea included in their $33,000 cost?

Mr. CASEY. That is not paid by the Federal Government.

Mr. ROONEY. Indirectly it is, because the shipping companies are subsidized by the Government.

Mr. CASEY. Not entirely, of course. Some of the students go aboard the subsidized ships as well as unsubsidized, which is one consideration.

Mr. FORSYTHE. It would at least seem there is room for debate and discussion as to the relative merit of these two systems which certainly, it seems to me, is something we ought to have some information on.

Mrs. SULLIVAN. Did you find out if the schoolship was a ship that was donated or given to them by the Federal Government?

Mr. FORSYTHE. Yes. They all are so far as the State academies are concerned.

Mrs. SULLIVAN. Of course, that would be part of their overall cost.

Mr. FORSYTHE. This is true.

Mr. ROONEY. Mr. Casey, could you tell us how many State school graduates we had in the year 1974?

Mr. CASEY. Graduates of 1974?

Mr. ROONEY. Yes, of the six State schools.

Mr. CASEY. I don't think I have 1974 figures. I have 1973 figures.

Mr. ROONEY. Do you think you could supply for the record the 1974 figures and the number of cadets who went to sea and the number of cadets who assumed shoreside duties in the maritime field?

Mr. CASEY. We can, but it would have to be sometime after the fact, Congressman. As I indicated earlier, graduates frequently do not accept employment immediately upon graduation. Having gone through a rigorous course they frequently take a couple of months off before they actually accept employment.

I don't have the breakdown as between the individual schools, to answer your question, but the number of State academy graduates projected for 1974 is 370 for all schools combined, which is essentially the same as it has been. Of course, in 1973, there were no graduates from the Massachusetts Maritime Academy, so it's something like it was in 1972.

Mrs. SULLIVAN. Total graduates were how many?

Mr. CASEY. For State schools, 370.

Mr. FORSYTHE. On this question of analysis where the graduates from State academies go, if 1973 figures might be available, could we have them? From a timely standpoint it would be helpful rather than waiting for the 1974 figures.

Mrs. SULLIVAN. As a comparison, yes.

Mr. CASEY. I have before me the employment of the 1973 graduates for the State schools, which I could summarize.

Out of a total of 319, which was relatively low because it did not include any graduates from Massachusetts Maritime Academy in 1973, 197 were employed aboard ships. That includes domestic shipping. That is 61.5 percent. There were none employed on foreign-flag ships. There were 63, which is 19.9 percent, that were in shoreside-related maritime industry. There were 43, which is 13.6 percent, employed in shoreside nonmaritime-related industry. There were 16, which is 5 percent, that were in the Navy, Coast Guard, or other armed services.

Mrs. SULLIVAN. These were all the State schools combined?

Mr. CASEY. Yes. I do have it broken down by schools.

Mr. FORSYTHE. Do you have the same figures for Kings Point on 1973?

Mr. CASEY. Yes, sir, I do. This, incidently, is not a full universe. This was based on 177 responses out of a total class of 196. Those figures were 79 out of the 177 on shipboard, which was 44.6 percent; 57 in shoreside maritime-related industry, which is 32.2 percent; 25 in shoreside nonmaritime-related, which is 14.1 percent; and 16, which is 9.1 percent, in the armed services.

Mr. FORSYTHE. Thank you.

Mrs. SULLIVAN. How much of the Maritime Administration's research and development budget during the current fiscal year has been allocated to the National Maritime Research Center at Kings Point? If you don't have that at hand, could you furnish it for the record?

Mr. CASEY. $2,044,800 is the total figure. That includes projects that are accomplished at the National Maritime Research Center, in addition to the administration technical support activities at the National Maritime Center.

Mrs. SULLIVAN. How much are you planning to allocate to this facility in fiscal year 1975?

Mr. CASEY. $1.8 million.

Mrs. SULLIVAN. How much financial support has the Research Center received from industry during the current fiscal year?

Mr. CASEY. Of that $2,044,800, there is no participation from industry directly in support of the National Maritime Research Center. As a matter of fact, the projects that I mentioned, which are pursued at the National Maritime Research Center, are not cost-shared projects. All of the cost-shared projects in our research and development program are administered from our Washington headquarters office. So these are somewhat smaller in size that are done at the National Maritime Research Center. None of them are cost-shared. A lot of them are in the nature of technology rather than hardware.

Mrs. SULLIVAN. Would you furnish for the transcript a detailed description of each research project currently at the Center and the cost of each of these projects?

Mr. CASEY. Yes. We have such a listing.

Mrs. SULLIVAN. If there is any industry contribution to it, show it. If there is none, just show none.

Mr. CASEY. Yes, Ma'am. We have that information.

[The information requested follows:]

NATIONAL MARITIME RESEARCH CENTER PROJECTS, KINGS POINT, N.Y.

	Fiscal year 1974 plan	Obligated	Commitment in MarAd
Key programs:			
Human factors	$315,000	$306,302	$8,698.
Automation	160,000	97,395	62,605.
Propulsion	30,000	30,000	
Maritime Data Center	326,800	196,807	129,993.
Nuclear	24,000	0	24,000.
Energy	40,000	40,000	
Ships of opportunity	25,000	60	24,940.
Marketing	30,000	30,000	
Institutional	422,000	269,384	152,616.
Administration	482,000	482,000	
Technology support	190,000	110,817	79,183
Total	2,044,800	1,562,765	482,035.
Human factors:			
Personnel study of licensed U.S. merchant marine officers.	160,000	155,702	$4,298: Improving efficiency and quality of human resources in the maritime industry with the objective of increasing job satisfaction and morale and reducing the psychological uses of accidents and grievances through improvements in vessel design, management development, accepting changes in technology, etc.
Personnel study of unlicensed U.S. merchant marine seamen.	95,000	90,600	$4,400: Increase productivity and efficiency of personnel who sail American-flag ships while increasing job satisfaction and morale and reducing the psychological causes of accidents and grievances, development of a viable pool of personnel to meet the changing needs of the industry and assessment of the skills of the existing work force through improvement in vessel design, training, management development, acceptance of changes in technology, etc.
National Academy of Sciences study of human errors.	60,000	60,000	Provide the ad hoc MTRB panel data to aid them in rationalizing the concept of human error and suggesting a program through research and training to reduce the incidence of human error caused merchant marine casualties.
Automation:			
Illumination aboard ship by light transmission via light pipes.	20,000	0	$20,000: Determination of the feasibility and applicability of "piping" light to all areas aboard a ship i.e., lighting without the employment or distribution of electrical cabling, sockets, fixtures and switches and issue a technical report as to its applicability and reliability compared to present methods of lighting.
Improvement of night vision	30,000	18,398	$11,602: Development of low cost commercial instruments for the marine environment to provide the most suitable night vision capabilities for ocean going vessels and inland waterway barge and tows.
Improved control systems and direct digital steering.	75,000	43,997	$31,003: Design of a computerized direct digital steering system for continous all-weather steering of high-speed ships that can be coupled with automated great circle navigation and which leads to expected performance limitations, and a working prototype and evaluation.
Handbook of applied marine electronics for deck officers.	35,000	35,000	Handbook for fulfillment of present and forecasted requirement of the deck officer of a modern U.S. merchant ship in order to utilize improved operational marine electronic systems aboard ship and other locations.
Propulsion:			
Modularization of ships machinery.	30,000	30,000	Investigation of design components and systems of marine powerplants to facilitate purchasing of packaged unit for economical installation and maintenance and specific suggestions regarding machinery components and systems that could be included in modular packages for installation and/or maintenance and delineate areas of savings in vessel construction and operation.

NATIONAL MARITIME RESEARCH CENTER PROJECTS, KINGS POINT, N.Y.—Continued

	Fiscal year 1974 plan	Obligated	Commitment in MarAd
Maritime Data Center:			
TRANSIM satellite navigation system.	25,000	15,900	$9,100: Evaluation of more than one of the new TRANSIM systems over a period of time on U.S. merchant ships to collect statistical data and test the hypothesis that the system would increase productivity by providing the requirements for high sea navigation thus permitting safer and more expeditious sea passage.
Navigation/communication support.	162,800	64,436	$98,364: Provide engineering and design for the Maritime Control Center primarily in the area of the Marad satellite program.
Wave height indicator	35,000	18,271	$16,729: Develop and test a disposable indicator that provides wave height and period measurements to a ship at sea, transmitting these measurements from ship to a weather data center so that accurate sea state data will be available in re-routing ships to by-pass heavy weather to avoid ship delays and damage.
Hull damage indicator	30,000	25,771	$4,229: Design and develop an indicator that provides a calibrated readout on a ship's structural stress during heavy weather to enable the master to take proper steps to reduce stress and avoid hull and cargo damage.
Electronic docking system	36,000	35,154	$846: Design, develop and test an instrumentation system that displays a ship's docking status to provide the docking officer with essential information to achieve a safe and rapid approach to a dock.
Handbook of maritime satellite systems for deck officers.	38,000	37,275	$725: Handbook for fulfillment of present and forecasted requirements of the deck officer of a modern U.S. merchant ship to enable deck officers to understand not only theory but practice of available navigational communications satellite system for safety enhancement and efficient at-sea operations.
Nuclear: Radioisotope monitoring system for nuclear powered merchant ship.	24,000	0	$24,000: Application of a computer assisted high-resolution gamma-ray spectrometry aboard the next generation of nuclear ships as a means of monitoring affluent radioactivity.
Energy: Maritime industry responses to fuel shortages.	40,000	40,000	Provide the maritime industry with a survey and evaluation of feasible responses to potential restrictions in fuel supplies and determine optimum strategies to be followed under various assumed available fuel supplies and furnish a detailed plan for short and long-range reductions in available fuel supplies strategies for reducing fuel consumption regardless of how major or minor an energy crisis proves to be.
Ships of Opportunity	25,000	60	$24,940: Collection of ocean science data utilizing the USMMA midshipmen aboard selected ships to perform bathythermographic tasks, weather and wave-height sensor data and providing this data for use in the computer assisted operations research facility (CAORF).
Marketing: Development of lash cargoes, phase II, intermodal shipments.	30,000	30,000	Increase revenue through increased rates of cargo diversion from other (tramp and non-U.S.-flag break-bulk) services and to an extent the development of new cargoes by pinpointing commodities, moving in which markets and under what conditions can most economically be moved by LASH/Seabee ships.
Institutional:			
University and industry support services.	40,000	7,843	$32,157: Utilization of specialized expertise of industry and universities in areas of ship maneuvering, simulation, computer software documentation, ship simulation, et cetera to attain R & D mission accomplishment and other areas as required.
Maritime research information systems (MRIS).	20,000	16,652	$3,348: Abstracting of selected journals and publications by the midshipmen of the USMMA for input into the MRIS system and distribution of these to ships operators, builders, naval architects and marine engineers, et cetera.
Technology forecasting program planning and evaluation.	92,000	91,615	$385: Exploration of technological frontiers and of feasible, their inclusion in planned budgets in order to increase productivity in the U.S. shipping industry.
Kings Point scholars	5,000	1,000	$4,000: Development of R. & D. capabilities among USMMA midshipmen by assignment of midshipmen to the NMRC to participate in various R. & D. tasks.
Maritime Operational Data Center (MODC), data bank II—hull casualty data.	65,000	35,784	$29,126: Combining vessel hull casualty data from a world wide data input in an effort to determine the causes of hull casualties thus assisting the decision makers as to whether the cost corrective action is worth the money spent to take corrective action.
Maritime industry technology transfer and institutional consortia.	55,000	6,148	$48,852: Provides a quick and efficient means of locating specialized expertise related to R. & D. programs for Marad, maritime community, and the NMRC.

NATIONAL MARITIME RESEARCH CENTER PROJECTS, KINGS POINT, N.Y.—Continued

	Fiscal year 1974 plan	Obligated	Commitment in MarAd
Institutional:—Continued			
Shipping productivity	75,000	73,492	$1,508: Indentification and analysis of pricing and market conditions which can lead to more efficient operation of the maritime industry and an analysis for the market penetration by American container carriers for use is marketing strategies.
Digest technical publications	70,000	36,760	$33,240: Condensation of comprehensive volumes of research programs, without losing the technical aspects, in a form suitable for technical periodicals or publication by any of the government printing agencies for nationwide distribution.
Administration: NMRC Support (Kings Point 400-48043) Fiscal Year 1974, Kings Point, N.Y., Mccready 190100, 12-460-54-470.	482,000	482,000	Fundin requirements for yearly maintenance, heat, light, USMMA professor participation in NMRC activities, etc.
Technology support: Project support for major headquarters programs.	190,000	110,817	Support projects for related Headquarters programs such as navigation communications, CAORF, e'c.

Mrs. SULLIVAN. At least two of the State academies which the committee visited have vastly overbuilt physical plants. For example, at Fort Schuyler, one 300-bed dormitory constructed in 1970 at a cost of almost $3 million is standing completely vacant. The Massachusetts Maritime Academy, with a student enrollment of approximately 600, has a gymnasium with a seating capacity for 5,000. How can this be explained? Does the Maritime Administration maintain liaison with these schools for the purpose of relating their expansion plans to the future requirements of the U.S. merchant marine for licensed officers?

Mr. CASEY. In response to the latter part of your question first, with respect to the physical plants at the individual academies, we do not participate in those decisions. Those are strictly handled through State funding or from alumni funding or whatever source they might get it from.

Mrs. SULLIVAN. The Federal Government doesn't participate in the cost of any of these, whether it be the gymnasium, the dormitory, or any physical plant?

Mr. CASEY. We make a $75,000 a year grant to each school which they can use for whatever purpose they want. Generally speaking, on capital improvements these would go through the State legislature before they can actually be funded from State funds or from some endowments or some other source. In answer to the first part of your question, as to the size of future classes and what the size of the industry might be, we do try to keep the State schools abreast of what our thinking is, at least as to what the level of enrollees should be. Of course, as you know, we do have a quota system presently in force with respect to the number of student allowances that we grant to the individual academies. This remains constant unless we advise them to the contrary.

Mr. ROONEY. Are you permitting schools to transfer their unused allocations to other schools?

Mr. CASEY. We have been, starting in fiscal year 1974. In fiscal 1972 and 1973 we did not and some of the schools were unable to fill their quotas. In fact, those quotas lapsed and other schools, mainly Massachusetts, had more freshmen enrolled than they have quota allowances granted. We now have been working with the

schools. Incidently, during those first 2 years, it was hard to get the schools together, particularly those who had unused allowances to turn loose. Last year it was coordinated and there was a very substantial reallocation as between individual academies.

There were 127 allotments transferred—20 from Maine and 107 from New York—to the other academies. The larger share of them went to Massachusetts. They got 113 of the 127. With the addition of 113 allotments more than we had originally allocated, they went from 77 to 190.

Mr. ROONEY. Of course, there was some consternation about transferring the unused quota in 1973 to another school and if they wouldn't get it in 1974 if they had additional students.

Mr. CASEY. We have not changed the basic quota allowance. In other words, that stays constant. At the moment we don't contemplate changing the basic quota. But we will reallocate those quotas to the extent that they are not used by any particular academy. The reason for that is so they could plan. For example, Maine has 150 student allotments for entering freshmen. They could plan on 150 incoming students. If they only enrolled 120, we could take 30 of those and transfer them to someplace that had more incoming freshmen than they had available allowances.

Mr. ROONEY. We talk about inflation, Madam Chairman. I was very amused to learn about this $75,000 contribution they make to the various State academies. I believe this started back in 1881. They were trying to encourage these academies, especially those located on the shoreline, to train young men for sea service. In 1881, the Government agreed to give each academy $75,000 if it would begin this training. Have you ever thought of increasing this amount?

Mr. CASEY. I am going to ask Mr. Friedberg to answer that question. I really don't go back as far as 1881.

Mrs. SULLIVAN. Strange.

Mr. CASEY. He doesn't either.

Mr. FRIEDBERG. As you know, there are proposals from the State academies for increases in both the grant amount, the $75,000, and of course also the student allowance funds. We have given consideration to both elements. The grant is in the way of free money in terms of what does it by itself produce. It has probably a lesser priority in terms of giving it favorable consideration than things that are more directly attached to the element of control or modification of the enrollment and production at the State academies, such as the student allowance.

Mrs. SULLIVAN. What allowance is made for each student?

Mr. FRIEDBERG. We allocate $600 per year, which is the maximum permitted by the statute for each of the cadets enrolled in the Federal support structure. They are paid this on a formula basis related to their attendance. It is basically $50 a month. That is the maximum under the law.

Mrs. SULLIVAN. There are bills to double that.

Mr. FORSYTHE. That statute was when?

Mr. FRIEDBERG. That was in 1958.

Mr. CASEY. That one doesn't back as far as the other one.

Mr. ROONEY. How are the grants made? Are they made in respect to the need of the individual student? Do you have any control over the States granting the students this subsidy?

Mr. CASEY. The $600 a year, sir, per student?

Mr. ROONEY. Yes.

Mr. CASEY. As I indicated, that is the statutory maximum. It is the actual amount.

Mr. ROONEY. I am aware of that. Say there are 150 students at one of the State schools who are allocated $600 each. Shouldn't that be on a need basis?

Mr. CASEY. As for the individual student's financial requirements?

Mr. ROONEY. Yes.

Mr. CASEY. How the State selects those eligible out of their quota, I would think probably that is a consideration. If, in fact, they do have more than their quota allowances, it would seem to me they would probably take into consideration the matter of need as to those who do or do not receive the allowance.

Mr. ROONEY. Don't you feel the Federal Government should review some of these grants? Getting back to that figure, I think there was one school that had the maximum number of grants. What school was that?

Miss MCDONNELL. Fort Schuyler.

Mr. ROONEY. Let's use Fort Schuyler as an example. Don't you think that if an individual who comes from a family whose family's average income perhaps is $20,000 versus another student whose family is making $8,000, that the student whose family is a low-income family should receive more and the individual getting the $600 coming from a family of high income should not receive that stipend?

Mr. CASEY. It certainly is something that is worthy of consideration. The $600 only was intended to cover subsistence, textbooks, and uniforms. It's certainly a small part of the total cost of education.

Mr. FORSYTHE. Of course, we must remember, and I think I am accurate, that these students are eligible for other Federal grant programs, for student aid, for a student loan. This is developing particularly on a need type basis. Perhaps this one is a basic minimum sustenance type thing. If you try to work these two together, it seems to me you might run into some conflict. We have to keep in mind that we do have other sources that are supporting these students and not, at least under the present way it operates, feel that this is the only one.

If you will yield further, I would like to go back to the funding for campus construction, and so forth, where no Federal funds are going to campuses. Are there other Federal funds through other program sources that these academies can make use of? Or do we have any knowledge of this?

Mr. CASEY. I am not aware of any, Congressman, although I am not familiar enough with the structure as to whether there could be anything from HEW or any other Federal source that might find its way into capital improvements. I believe most of it comes from the States or from endowments.

Mr. ROONEY. How many foreign students do we have at the State academies?

Mr. CASEY. Again I don't know the answer for all State academies. That was the question I believe that was asked by the subcommittee. The only response I saw from the State academies was from Maine. They have 53 Iranians and two other foreigners for a total of 55 out of

their total student body when they responded to that question in October. I believe that is probably very substantially higher than anyplace else. They do have this program with the Iranians. I am not familiar with it.

I understand New York has some, but I don't know what the number is.

Mr. ROONEY. How about Kings Point?

Mr. CASEY. At Kings Point as of October, 1973, they had one Brazilian.

Mr. ROONEY. If it costs the American taxpayers an average of $33,000 for 4 years at Kings Point, what does that foreign country pay the Government for that student at Kings Point?

Mr. CASEY. I believe that is funded through the State Department. I retract my prior answer. That one is funded by the Federal Government. It's part of the statutory requirement. There is a statutory provision that at any one time we can have up to 12 enrollees in Kings Point from the American Republics. They do fall into that. They are not eligible for Navy commissions or U.S. merchant marine licenses.

Mr. ROONEY. But the American taxpayer does pay for their education?

Mr. CASEY. Yes; the American taxpayer is paying for that education.

I understand that the other academies have the same arrangement. As I understand it, this is part of the people-to-people exchange within the Western Hemisphere republics.

Mr. ROONEY. This is part of the American giveaway program.

Mrs. SULLIVAN. I would like to ask you for my own clarification, does the $600 go to the school? Or does it go to the enrolled student?

Mr. CASEY. Under the law it can go either way. We pay it to the school. The school bills us and provides a voucher which shows the individual's attendance and we prorate it.

Mrs. SULLIVAN. Does the school give it to the student? Or do these schools just credit them for their meals and whatever it is supposed to be for?

Mr. CASEY. I believe it goes into a student account, where he draws books and uniforms, and so forth, against that account.

Mrs. SULLIVAN. So it really goes to him, but not all at once?

Mr. CASEY. In kind rather than cash.

Mrs. SULLIVAN. If you say they had 100 students and you gave them $600 each, $600 times the 100 because of their hundred students and then something happens and the enrollment is only 80 instead of 100, what happens? You mentioned before that you could transfer allotments to other schools. If you don't transfer it, what happens to the additional money?

Mr. CASEY. Of course, when we budget we budget for attrition. We expect, based on past experience, that there will be a certain amount of attrition.

Specifically to answer your question, to be entitled to this allowance, the student must be enrolled and must be actually in attendance. Actually, if he is away for more than 5 days or something, then he is not entitled to the allowance for that period that he has been absent.

Mrs. SULLIVAN. Here is the question that was brought up by the ad hoc committee. Why, for example, during fiscal 1973, were 251 student subsidies allocated to Fort Schuyler for only 174 eligible

students while the Massachusetts Maritime Academy had 176 eligible freshmen and they received only 77 allowances? The 1965 formula is not, in their opinion, a satisfactory explanation since one State school, the Great Lakes Maritime Academy, was not even in existence in 1965 and yet subsidy payments have been allocated to its students. Can you answer that?

Mr. CASEY. As for the latter part of your question, obviously if Congress felt that the Michigan school was important, and it has provided the funding for it through these allowances, I think there has to be an exception. If you are going to establish a base in 1965 and you have one entity that wasn't in that base, I think you have to make an exception to that particular entity.

Mrs. SULLIVAN. That is when this committee accepted an amendment on the floor by a Michigan member, if I am correct, to allocate funds to that academy. Is that right?

Mr. FRIEDBERG. I can't be too accurate with regard to exactly when it happened, but I believe it was something of that nature.

Mrs. SULLIVAN. It has been a number of years.

Mr. FRIEDBERG. That is right.

Mrs. SULLIVAN. In other words, there were no funds for it, but we simply had to see that they were supplied through the authorization that came out of this committee.

Mr. FRIEDBERG. It was felt that the school at Michigan was a desirable addition to the maritime training and funds have been allocated to it. As I say, when we came to the formula of establishing 1965 as a base, we had to make an exception to a particular entity that wasn't in existence in 1965.

Mrs. SULLIVAN. But this doesn't quite explain, for instance, the Massachusetts academy with 176 eligible freshmen and they received only allowances for 77 of them.

Mr. CASEY. This is true. Also, in your question you referred to the 251 allocations that were applicable to New York. This is still New York's plan. They were not able to fill that quota. In 1974, in recognition of the fact that, even though we established the level of allowances at the 1965 base, it was appropriate to transfer allowances from those schools which didn't fill their quotas to the schools who exceeded their quotas.

For example, in 1974, where we had the same basic allotment, where there were 251 allotted to Fort Schuyler, they had 107 unused allotments. We transferred 98 of those to Massachusetts. We also took 20 from Maine, which was allotted 150 and only filled 130. So that we transferred to Massachusetts enough to give them allotments for I believe 190 incoming freshmen, which was almost up to their 1974 admissions. I think they have slightly over 200.

Mrs. SULLIVAN. Using the figures that I have here for Fort Schuyler, where 251 subsidies were allocated but only 174 were eligible, we have approximately 80 less students. So that amounts to about $48,000. That $48,000 would be transferred and was transferred?

Mr. CASEY. Not in 1973. As I indicated earlier, prior to 1974, we were not able to get the schools together as far as being willing to release some of their allotments. It wasn't until 1974 that they agreed to do this. In 1973, and also in 1972 for that matter, there were schools whose allotments lapsed because they didn't have

students eligible to receive them. Of course, in that case budgetwise these are no-year funds and we transfer them forward and ask for that much less the following year. There was in fact $127,000, for example, which was available from the 1972 appropriation which we applied against our 1974 request for funds.

Mrs. SULLIVAN. When you balance up the following year you make up for any overage which you gave them the year before?

Mr. CASEY. That is right.

Mrs. SULLIVAN. And you also take care of the underpayment the following year for those that had more enrollments than the allocations that were given them for that year?

Mr. CASEY. I am not sure I understand the question.

Mrs. SULLIVAN. Fort Schuyler had an overage, so you paid them according to what their enrollment was expected to be?

Mr. CASEY. Right.

Mrs. SULLIVAN. But they had less.

Mr. CASEY. Not what their enrollment was expected to be. We paid them what their enrollment actually was. In other words, although they had a quota of 251, in fact, all the cash they received was applicable to the 177 in attendance. They received no cash for the difference between that 177 and 251. That money became surplus in our budget.

Mrs. SULLIVAN. In your budget, not in theirs?

Mr. CASEY. Right.

Mr. FORSYTHE. There are two things. Do you believe it would be appropriate to review the 1975 base quota at this time? Are we not now in a situation with this voluntary release of allotments in Massachusetts that there is no way at the present time that they can count on new freshmen allotments at the level that they have now received for 1974?

Mr. CASEY. One thing, Congressman, you referred to 1975. Of course, what we have told the schools is that by January 1 of the year in which they are bringing in their freshmen we would tell them what their allotments were, if there were any change. I believe that it would not be equitable at this particular point to review 1975 because it is now well into the point where these schools have made their decisions as to how many students they would have taken into the class of 1975. It might be appropriate for 1976 to review between now and January whether there should be a redistribution of allotments between schools because of the change in the relative size of the classes from what they were in 1975.

Mr. FORSYTHE. I did not use dates. As I recall, I said "looking forward." Is Massachusetts going to be able to enroll under the allotments the same as were enrolled by this transfer for 1974?

Mr. CASEY. It would be dangerous on their part to count on the fact that in 1975 they would be able to get 113 redistributed allotments.

Mr. FORSYTHE. They are back to their base.

Mr. CASEY. That is right. They can only count on 77. They can gamble on the fact that New York and Maine last year did not fill their quotas and probably there will be some unused quotas that could be transferred to them. But that would be a gamble on their part.

Mr. FORSYTHE. So it makes it rather difficult for Massachusetts, specifically, to do any forward planning tied into this allotment.

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Mr. CASEY. As far as the number of allotments they would receive, to plan any more than 77 would be a conjecture on their part, yes, sir.

Mrs. SULLIVAN. I think this is a little late in asking this, but if the 1970 Act is going to really increase our number of ships under the American flag, when the number of ships were decreased, the academy stayed at a high level of enrollment, even though they knew they couldn't place and there was no place to put these students. I realize the overhead goes on, whether the academy is full or only takes in half. When you realize that we are training all of these young people at great expense, knowing that we couldn't use them all at sea which is where they were being trained for, and knowing in all of these years that we had so many graduates who were not employed in industry or at sea, why was there not some curtailment? I can understand why there wasn't, but I think somebody should be alert enough, and I don't know if Maritime Administration has complete control over this, to suggest to the academy they were overeducating people for whom there are no jobs. Is this Government responsibility?

I understand the national need to keep our own qualified officers ready to be at sea, but this has gone on for a number of years. Shouldn't there have been some suggestion, or maybe there was, that they should curtail this?

Mr. CASEY. We do control it. The only thing I might say with some trepidation on the question as to whether 209 graduates is a high level of graduates from Kings Point, I think that is questionable. Two hundred was what we were getting out of the academy pre-Vietnam. The schools reacted to the level of employment and increased their enrollment during the period from 1965 to 1969. The Maritime Administration and the Merchant Marine Academy elected to maintain that level of output from the academy. It did not jump up its enrollment.

Mrs. SULLIVAN. Of course, it's easy to do that when you are using Federal funds and you don't have to make the kind of pleas that you would in a private school or even in a State school. This is the thing that I question. I think this is no time to begin to cut down because we are hoping, with all the tankers being built, that we are going to be able to use these graduates. It just seems that, as we look through this—and I know there was a study made a few years ago, but I personally was never able to spend any time studying it—when we are asked now to increase this allotment, to double it, I know what inflation means. I think we all do. Is this our responsibility now, to double the cost of this?

Mr. CASEY. You are relating to the $600 allowance the students have?

Mrs. SULLIVAN. Yes. I think Kings Point too is asking for greater allocation, are they not? Or do they just come in for the regular appropriations?

Mr. CASEY. The record for last year was that a Kings Point student gets allotted $575 a year to apply against his books and uniforms. Last year the average amount per student was $591.67 in the student account. So that that $575 was still covering those two elements of books and uniforms.

In the State schools, it really is a question. I don't know the answer to your question as to whether the Federal Government should increase this or not. I can respond, as you responded, that when this

was established in 1958, $600 bought x amount. Now, it buys much less than x in terms of goods and services.

Mrs. SULLIVAN. This isn't when the academies really began with their enrollment and the academies were established. They had been established before that, but,we hadn't been allocating any funds. Is that right?

Mr. CASEY. Let me refer to my expert.

Mr. FRIEDBERG. There has been a long history of Federal support for State academies. The 1958 act was actually designed, as I understand it, to combine into one location within the Maritime Administration the Federal support that had, prior to that time, come from a number of sources, including Navy direct. So there had been a long history of support for the academies.

I really don't know what the history was prior to 1958 in the way of direct student subsidy allowances. But there had been Federal support dating way back. We are talking about into the 1800's.

Mrs. SULLIVAN. In other words, it was justified in 1958 or it wouldn't have been passed. But is the justification still there with the increase necessary, probably because of inflation? What is the Federal Government getting out of this as far as the State academies are concerned?

Mr. CASEY. If we accept the fact that training the merchant marine is in the national interest, then I think what the Federal Government is getting is a trained merchant marine officer to support the country in terms of national security.

Mrs. SULLIVAN. So much has been done in the national interest. We could say this about doctors and dentists and almost anybody, if you wanted to make a case for it.

Mr. CASEY. This is true. I believe that since the merchant marine is considered to be the fourth arm of defense, it has somewhat higher priority in that national scheme than perhaps some other professions.

Mr. ROONEY. The supply-and-demand study indicated that there is going to be an offshore training school in Louisiana. Who is going to establish this school?

Mr. CASEY. This will be done under the region vocational technical center in the State of Louisiana. It's a State program. It will be supported by industry. The school is presently in existence. As a matter of fact, they have 60 enrolled students there. It's presently being conducted in Terrebonne Parish in Louisiana.

Mr. ROONEY. What kind of programs are they offering?

Mr. CASEY. It will be pretty much on the pattern of adult education courses. They will train a master of 300-ton and lesser ships. An advanced course will take care of that master beyond the 100-mile limit. They will have a course for the training of mates and the training of tankermen and training of other seamen. They will have courses in radar and collision avoidance, and pollution abatement. These will be individual courses of anywhere from 14 to 60 days' duration. The student can really elect to take whatever course he wants. It presently is not structured as a degree type program or a standard curriculum.

Mr. ROONEY. You hit on a sore spot as far as I am concerned. Did you say this entire program is being funded by industry?

Mr. CASEY. No, sir. I think the State Department of Education of the State of Louisiana will be doing a substantial amount of funding.

I don't know what the breakdown is as between State funds and industry funds.

Mrs. SULLIVAN. Would that come under vocational education? Because if they are selecting a certain type of training, I would say it would be a vocational training and there are grants from the Federal Government for vocational training. I don't know whether this would apply or not.

Mr. CASEY. I am not sure, Madam Chairman, but I would think there are Federal funds that channel through the States for vocational educational training and that this very well is what the source of those funds is. I am not sure.

Mr. ROONEY. What does the Department of Commerce do to encourage industry to participate more fully in funding some of these State school and Federal programs? This is the thing that I think we found in our travels that really upset the committee. These boys are being subsidized by Federal dollars. They are educated at the expense of the taxpayers and the individual graduate afterwards makes some tremendous amount of money, as you mentioned, somewhere between $15,000 and $20,000. We went to one school. I am not going to name it because I think it would be unfair. This one boy was going to start with this company at $18,000 plus other benefits, insurance and health benefits, and so forth. It almost amounted to $25,000. I asked the superintendent what this company, a multi-multi-billion-dollar corporation, contributed to that school. He said, "They contributed a scholarship." I said, "A full scholarship?" He said, "No. It was $1,500 per year."

I think this is appalling. I think if industry is going to reap the profits of our contributions into the maritime field, they ought to make more of a significant contribution to these State schools and also our Kings Point Academy.

Mr. CASEY. To answer your basic question, as to what the Department of Commerce does to solicit and encourage contributions, I have to answer that we do not participate in that type of activity.

From an industry standpoint, of course industry does contribute to the union schools, not only the Calhoon School which trains new officers but——

Mr. ROONEY. I am not talking about the union schools. I am talking about Kings Point and I am talking about the State schools. They contribute practically nothing. Yet you go into every cafeteria at the State schools and every gymnasium and there are all your oil companies all over the country with their banners. That is all they have is banners.

Mrs. SULLIVAN. You probably read the same thing I did. Fifteen of the graduates of Kings Point went to Exxon, 15 to another oil company, I forget which one, and 40 of them went to tankers. I don't know if those 40 were included in the 30 to the two oil companies. They are officers being trained at taxpayers' expense. God knows, they are making enough profit, they don't have to take anything else away from the taxpayer.

Mr. CASEY. This is true of the major oil companies, I guess. Over the last few years I think some of the other companies in the industry have not been that profitable. The subsidized companies at least have not been particularly profitable over the last few years. Of

course, they are paying those high salaries and the cadets bargain for jobs and they are getting services for that stipend that they give. I am inclined to agree with you, that industry should participate more in this type of support. I don't know whether it's appropriate for the Department of Commerce to go out and encourage it.

Mrs. SULLIVAN. I think they could.

It's 12 o'clock. We have a lot of questions we want to ask.

Mr. ROONEY. In that respect, Madam Chairman, could we have the record remain open and I could submit some of the additional questions I have?

Mrs. SULLIVAN. Yes. I know you have a lot you want to ask. I have really taken up most of the time myself. But we will submit to the reporter the questions we would like to have some answers to.

I think this is serious enough and the committee has done a marvelous job and taken up their own Saturdays and evenings in going around to these places. We want a report that is as accurate and good as it can be. When you get the transcript these questions will be in it.

Mr. CASEY. We will be pleased to respond to them.

Mrs. SULLIVAN. If you will do the very best you can so we can have some good frank answers, if we have facts we will know how to act. If we have guesses, the legislation will be guess work. We are trying to do something that will be based on the facts that we have been able to gather.

One of the stated purposes in the House report on the bill which became Public Law 85-672, the Maritime Academy Act of 1958 was to "maintain for the State maritime academies continuity of Federal financial assistance." Was Maritime Administration's reduction, beginning in 1971, of a number of student subsistence allowances to students to the State maritime academies consistent with the purpose of the 1958 act?

Mr. CASEY. Yes. The Maritime Administration has continued to furnish Federal financial assistance to the State academies. However, in light of a 1970 study that projected an oversupply of merchant marine officers beginning in 1971, that did in fact materialize, as Maritime Administration found it advisable to tailor Federal support to the normal peacetime needs of the industry.

Mrs. SULLIVAN. In January 1971, the Maritime Administration informed the State maritime academies, by letter, of its new policy to limit student allowances for entering freshmen beginning in the fall of 1971 to the number of allowances allocated to each school in fiscal year 1965. Why was this standard never published in the regulations which the Maritime Administration has adopted under the Maritime Academy Act of 1958?

Mr. CASEY. 46 CFR 310.7 (38 FR 10087, April 24, 1973) gives full notice of the freshmen allowance ceilings in existence, although the number of such allowances allocated to each school is not shown.

Mrs. SULLIVAN. What exemption does Maritime Administration claim from the public information requirements of the Administrative Procedure Act?

Mr. CASEY. Regulations implementing the Maritime Administration's various subsidy programs are generally exempt from the requirements of the Administrative Procedure Act as matters relating to public grants. (5 U.S.C. 553(a)(2)). However, in almost every

instance, regulations are published in proposed form and full opportunity for public comment is provided before final adoption.

Mr. ROONEY. The introduction to Maritime Administration's current supply and demand study states that public awareness of declining employment opportunities, among other things, led to entry-size classes significantly below the levels planned by the schools in 1969. Why has the student enrollment at Kings Point remained fairly stable during this same period?

Mr. CASEY. Vacancies at Kings Point are allocated among the 50 States and Puerto Rico on the basis of their representation in Congress and to the Canal Zone, Guam, American Samoa, the Virgin Islands and the District of Columbia by special provision (46 U.S.C. 1126). While there has recently been a moderate downturn in the number of applicants, the total number of applicants has always exceeded available seats in the entering class by severalfold. As a result actual enrollment of freshmen at the Federal academy has remained relatively constant.

Mr. ROONEY. Why has Kings Point reduced its admissions criteria from a required composite score of 2,000 on the SAT and achievement tests to a required composite score of 1,800? The ad hoc committee has been advised of this latter fact by the staff of the GAO.

Mr. CASEY. Based on our discussions with the academy, it is our understanding that the quality of entering college-level students on a nationwide basis, as measured by the scholastic aptitude test scores, has been declining for some time. We do not have any hard information on the cause of this and believe this is being developed in the General Accounting Office study which we have not yet seen. The reduction in minimum requirements took into account the level at which entrants could still successfully complete the course work.

Mr. ROONEY. The Maritime Administration supply and demand study assumes a hawsepipe input into the officer ranks of 25 deck and 30 engine officers per year through 1984, which represents a decrease from the hawsepipe input used in their 1970 report. What do you base these estimates on?

Mr. CASEY. The projection of the number of men obtaining original third mate or original third assistant engineer licenses through self-study is based on published U.S. Coast Guard data covering issuance of these licenses.

Mr. ROONEY. Why do they remain constant?

Mr. CASEY. The figures are used as a constant in the study basically for want of any basis to assume that under present conditions there would be any significant increase or further decrease.

Mr. ROONEY. Why are they less than the hawsepipe input used in the 1970 report?

Mr. CASEY. The hawsepipe input used in the study is less because there has been a significant fall off in hawsepipe input since the 1970 study.

Mr. ROONEY. On what do you base your assumption that the Calhoon MEBA Engineering School will graduate 90 engineers each year between now and 1984?

Mr. CASEY. The number of graduates projected from the Calhoon MEBA Engineering School is based directly on the projections supplied by the Calhoon School, although the school indicated that this level would be firm only over the next several years with values further in the future still to be determined.

Mr. ROONEY. Have you had these assurances from the Calhoon School?

Mr. CASEY. While the assumption with the Calhoon MEBA Engineering School graduates is based directly on the projections supplied by the schools, it should be observed that the school indicated that this level would be firm only over the next several years with values further in the future still to be determined.

Mr. ROONEY. How many 1974 graduates of Kings Point and of the six State academies have accepted employment in the off-shore oil/mineral exploration field?

Mr. CASEY. Graduate employment data on the class of 1974 is not yet available. We have requested such information from the schools and will furnish it for the record as soon as it becomes available.

Mr. ROONEY. Please furnish, for the record, a breakdown by school.

Mr. CASEY. We do not have any information on this matter at this time. We have requested it from the schools and will furnish it for the record as soon as it becomes available.

Mr. ROONEY. How many jobs were available in this field to these graduates at the close of the 1974 academic year?

Mr. CASEY. We do not have any information on this matter at this time. We have requested it from the schools and will furnish it for the record as soon as it becomes available.

Mr. ROONEY. How much has the oil industry contributed to each of these schools during each of the last 3 years?

Mr. CASEY. We do not have information of this type with regard to the State academies; however for Kings Point the oil industry contributed gifts and grants of $6,200 in calendar year 1971, $6,900 in 1972, and $11,300 in 1973. In addition, Tidewater Marine Services, Inc., an off-shore drilling resupply and service company donated a 60-foot resupply boat to Kings Point in 1973 for training use in the handling of the type of boats used in the off-shore oil resupply industry. This boat is valued at $40,000.

Mr. ROONEY. In its 1970 report, the Maritime Administration suggested the creation of a voluntary Merchant Marine Reserve as one means of providing for emergency needs, should they arise. No reference is made to this alternative in the current Maritime Administration supply and demand study. Why?

Mr. CASEY. In 1970 we referred to a voluntary Merchant Marine Reserve, noting that it would be purely voluntary and that its creation would be difficult because of restrictions on authority and funds. These conditions still exist. We believe that a Merchant Marine Reserve of this nature would not assure the continued availability of an adequate workforce.

Mr. ROONEY. The third recommendation of the Maritime Administration study is to review the current Federal support ceilings intended to limit enrollment at the State academies. What does this mean?

Mr. CASEY. As you know, the study recommended that the initial increase in new supply to meet an expected shortage should be encouraged to come from industry schools since they have a more flexible response time than others. Furthermore, it was also recommended that a positive motivational program aimed at increasing the retention of graduates in seafaring careers should be instituted in the Federal and State academies. If it should appear that these measures would not be sufficient to cope with a developing shortage then Federal

support ceilings intended to limit enrollment at the State academies will be reviewed in relation to their impact on long-term supply. As you know, there have been mixed results with the imposition of the ceilings. At one academy enrollment has actually expanded and two other schools have not even been able to come up to these ceilings. As a result, we are not certain whether the ceilings have had a significant impact on overall enrollment at these schools.

Mr. ROONEY. Does Maritime Administration intend to lift the 1965 level ceiling on the number of allowances allocated to each State academy?

Mr. CASEY. The Maritime Administration has no plans at present to lift the ceiling on freshmen student allowance at the State maritime academies. We have recently initiated the practice of reallocating unused freshmen subsidies on a year-by-year basis among the academies and will continue to do so.

Mr. ROONEY. Would you favor increasing the amount of these allowances?

Mr. CASEY. We do not know whether the amount of such allowances should be increased. We are aware that the statutory maximum student allowance of $600 per year has not been changed since 1958. In the interim there have been considerable increases in the cost of living and in overall tuition and subsistence costs.

Mr. ROONEY. The Maritime Administration study projects that supply-demand ratios will have fallen to 0.97 for deck officers and 0.93 for engine officers by 1978. But in your analysis, an arbitrary factor of 15 percent from new Academy output is subtracted to account for demand from employment sectors outside the scope of the study. What would the supply-demand ratio be each year between now and 1984 if the Federal and State academies continue to graduate students at the current rate, and all of these graduates accept employment in one of the seagoing areas considered in the study, to the extent that it is available?

Mr. CASEY. We subtracted an arbitrary factor of 15 percent at point of graduation from each graduating class at each of the academies to account for demand from other sectors of the maritime industry beyond the oceangoing ships of 1,000 tons or over which form the basis for the demand curve shown in most of the charts in the study. This is explained on pages 25 and 26 of the study. Elimination of this 15-percent deduction on graduation of each class would be to assume that graduates would not seek jobs in the offshore exploratory drilling industry, the inland waterways and other marine sectors other than oceangoing ships of 1,000 gross tons and over. These other marine sectors constitute a substantial and expanding part of the total requirement for deck officers. One of the variations explored in testing the baseline results was to eliminate this 15-percent of reduction in Academy output for other marine demand. As discussed on page 57 of the study, crossover results were little different from the baseline case. For deck officers the crossover point was pushed back 1 year, to 1979; for engine officers the crossover remained in 1978. The size of the gaps narrowed somewhat in later years. A comparison of supply-demand ratios for the baseline case and for the case in which the 15-percent deduction is eliminated, is shown in the following:

OFFICER SUPPLY/DEMAND RATIOS

	Deck officers		Engine officers	
	Baseline	Adjusted[1]	Baseline	Adjusted[1]
1974	1.15	1.16	1.02	1.03
1975	1.15	1.17	1.04	1.06
1976	1.12	1.14	1.03	1.06
1977	1.06	1.10	1.00	1.03
1978	.97	1.01	.93	.96
1979	.92	.96	.90	.93
1980	0.88	0.93	0.88	0.91
1981	.85	.89	.86	.90
1982	.81	.86	.84	.88
1983	.78	.83	.82	.86
1984	.75	.80	.80	.85

[1] Adjustment eliminates 15-percent allowance in each academy graduating class for graduates seeking employment in marine sectors other than on oceangoing ships of 1,000 gross tons and over.

Mr. ROONEY. The report of the Maritime Administration to the Subcommittee on Maritime Education and Training in February 1970 projected a surplus of men over jobs in U.S. merchant marine through 1982. But Maritime Administration's current supply-and-demand study predicts a shortage of deck and engine officers by the end of this decade, and possibly earlier. What specific Government and industry actions account for this reversal of the earlier projections?

Mr. CASEY. The projections of the two studies vary because output of the industry schools changed in the interim. In the 1970 study the projections were based on the assumption that all schools then in operation would continue their production. The 1970 study stated as follows: "For the union schools, the supply is one of capability based on present and past performance. It is not expected that these schools will maintain output in a surplus situation." As expected, the schools have substantially decreased their activities in production of new officers.

Mr. ROONEY. How far in advance were Maritime Administration's plans to limit the number of student subsistence allowances to students at the State maritime academies discussed with these schools, especially with those schools in the process of undertaking considerable amounts of new construction on their campuses?

Mr. CASEY. We had a number of meetings with the school superintendents over approximately an 18-month period prior to this action by the Maritime Administration to discuss limitation in fund availability and the need to establish some sort of control on student allowance expenditures. The February 1970 study was well known to the schools and was the subject of discussion with the Academies by the Maritime Administration. The exact nature of the limitation was decided on in late 1970 and announced to the academies at a meeting held in November 1970.

Mr. ROONEY. The GAO has advised the ad hoc committee that the rate of attrition in the Kings Point Class of 1974 was about 50 percent. The rate of attrition at Fort Schuyler has soared to even higher percentages in recent years. At the same time, Maritime Administration is predicting a shortage of ships' officers by 1978. What explanation can the Maritime Administration offer for these high attrition rates?

Mr. CASEY. The Kings Point class which has just graduated suffered an attrition during the 4-year course of study of somewhat less than 50 percent. At Fort Schuyler the attrition rate was somewhat more than 50 percent. We do not have solid information for the cause of this high attrition rate. With regard to the Federal academy, we understand that this is being investigated in the study currently underway by the General Accounting Office.

Mr. ROONEY. Is it the military system of education?

Mr. CASEY. We do not have solid information for the cause of this high attrition. We will have to await the findings of the GAO study which is currently underway at Kings Point.

Mr. ROONEY. The Maritime Administration supply and demand study projects "a shortage of deck and engine officers by the end of the decade, and possibly earlier." Do you also project a shortage of people in shoreside maritime employment markets?

Mr. CASEY. We have made no study of shoreside supply and demand for officer quality personnel.

Mr. ROONEY. The first recommendation of the Maritime Administration study is that initial increases in new supply to meet an expected shortage should be encouraged to come from industry schools. Why?

Mr. CASEY. We recommended that the initial response should be encouraged to come from industry schools because of their available capacity and their ability to respond with shorter lead time to changes in demand. The industry schools have a more flexible response time than the State academies or Kings Point and can produce new officers on short notice and in large numbers. If we placed our initial emphasis on the Federal and State academies, we would have to lock ourselves into a higher supply of officers at least 4 years before we could be certain they would be needed. However, if we relied primarily on increases from the industry schools, we could counter a shortage with much less notice and hence with better near-term knowledge of the actual shortage that would need to be handled. During the Vietnam crisis, considerable experience was developed by industry in operation of schools to upgrade unlicensed personnel to officer status. Reestablishment of these facilities for men who have already acquired considerable practical knowledge of shipboard skills can reduce the lead time required for significant new officer output to 1 year or less.

Mr. ROONEY. How and by whom should this encouragement be given?

Mr. CASEY. Copies of the current supply and demand study will be sent by the Maritime Administration to the trustees of the industry schools, as well as to union-management executives. We will, of course, follow up with these industry representatives with regard to their intended actions. We recognize that the lead time required by industry schools is less than that required by the federally sponsored programs.

Mr. ROONEY. Their second recommendation of the study is to institute a motivational program at the Federal and State academies to increase the retention of graduates in seafaring careers. What specifically does the Maritime Administration plan to do in this area?

Mr. CASEY. Studies are currently underway at the National Maritime Research Center which we hope will lead us to definite actions in this area. However, in the interim it is our intention to have the faculty and staff at Kings Point address themselves to making midshipmen aware of the need for well rounded officers at sea and to remind them of their responsibility in light of the education they receive at Federal expense. We propose to follow a similar approach at the State schools.

Mr. ROONEY. What is Maritime Administration's projection of the average length of time which a 1974 graduate of either the Federal or one of the State academies who goes directly to sea will remain at sea?

Mr. CASEY. The study projects that 1974 graduates who go directly to sea will remain in a seafaring profession an average of 9 to 10 years.

Mr. ROONEY. It appears that our maritime schools may be having difficulty attracting a sufficient number of qualified students. For example, the GAO has advised the ad hoc committee that their recent work at Kings Point indicates that the quality of the student which the Federal Academy admits has declined dramatically during the past 10 years. The Maine Maritime Academy has in its student body at least 50 foreign students to fill its vacant spaces. What has caused this problem?

Mr. CASEY. As you know, the drop in enrollment at the State academies caused two of the academies not to meet the Federal freshmen subsidy ceiling. This occurred at New York and Maine. We conjecture that the decline which occurred in 1971 through 1973 was based on the elimination of the draft and on the publicity given to the rapid decline in the merchant marine which occurred beginning in 1970. With regard to Kings Point there was a moderate downturn in number of applicants. However, this number has always exceeded available seats in the entering class by severalfold. As a result actual enrollment of freshmen at the Federal academy has remained relatively constant.

Mr. ROONEY. To meet the shortage of ships' officers which the Maritime Administration is predicting will occur, would it be desirable to impose some sort of an obligation on the graduates of the Federal and State schools to accept seagoing employment, if available, or, in the alternative, to make repayment for their education?

Mr. CASEY. The key problem with regard to imposing a firm service obligation or loan repayment scheme rests in the inability of the Federal Government to assure firm job offers to graduates in the maritime industry. Furthermore, at times when there are insufficient seafaring jobs, problems would arise with regard to determining justifiable release of obligation particularly under any repayment scheme. In our consideration of these concepts we foresaw the need to create an additional bureaucracy simply to monitor and judge the operation of the system. For this reason alone, we consider repayment schemes to be undesirable.

Mr. ROONEY. In view of the fact that the graduates have no obligation to go to sea, what assurance do we have that more of these graduates will accept seagoing employment as more jobs become available?

Mr. CASEY. Our only assurance at the present time is based on the history of performance of academy graduates as jobs become available. The record of all academies during the Vietnam sealift was outstanding. The number of graduates accepting seafaring employment on graduation reached over 90 percent.

Mr. ROONEY. In Maritime Administration's projection of the available work force in the 1974–84 period, enrollment at Kings Point is assumed to remain relatively constant. What is the enrollment at each State Academy assumed to be during this period?

Mr. CASEY. The assumed number of freshmen at the five seacoast schools under steady State conditions—commencing with calendar year 1974—is as follows:

School:	Estimated number freshmen[1]
California Maritime Academy	130
Maine Maritime Academy	[2] 150
Massachusetts Maritime Academy	237
State University of New York Maritime College	[2] 251
Texas Maritime Academy	50
Total	[3] 816

[1] Does not include foreign students and special students who would not be able to meet U.S. Coast Guard licensing requirements on graduation.
[2] This figure is considerably higher than the number of freshmen the school had in calendar years 1972 and 1973.
[3] This figure does not include the 50 freshmen the Great Lakes Maritime Academy is expected to enroll since they are not expected to become part of the oceangoing work force. They are expected to go to other areas of marine employment.

Mr. ROONEY. What rate of attrition is assumed at each of these schools during this period?

Mr. CASEY. An average attrition rate of 46 percent was assumed during this period.

Mr. ROONEY. One of the conclusions of Maritime Administration's supply and demand study refers to the fact that the research director of one of the leading officer unions seriously questions whether actual fleet size will meet the levels projected in Maritime Administration's analysis. Which union is this?

Mr. CASEY. This is the National Marine Engineers Beneficial Association.

Mr. ROONEY. What element in the Maritime Administration fleet forecast does this union take issue with—the rate at which break bulk vessels will be phased out or the rate of new construction?

Mr. CASEY. The research director referred to in conclusion No. 3 of the study is Mr. Fred Schumann of the National Marine Engineers Beneficial Association. The elements at issue are predominantly whether the number of break bulk ships currently in the active fleet will remain active, and to a lesser degree, the question of whether or not the Government will continue its commitment to a strong U.S.-flag shipbuilding program.

Mr. ROONEY. Have any other interested parties taken issue with this conclusion of the study?

Mr. CASEY. No.

Mr. ROONEY. The study states that the Offshore Marine Services Association has indicated that the oil and mineral industry, together with its supporting waterborne servicing needs, could easily absorb 1,000 trained men. What type of training are they referring to?

Mr. CASEY. They are referring to trained vessel personnel capable of working on oil and mineral exploration vessels and sites in various capacities.

Mr. ROONEY. Is the training being offered at our existing maritime schools a relevant preparation for employment in this area?

Mr. CASEY. In general, the curriculums at the academies remain oriented to oceangoing ship operations with elective courses at some academies making particular schools somewhat more applicable to offshore employment than others. Kings Point has had meetings with

off-shore employers to discuss additions to its curriculum with the intent to orient certain of its courses more closely to specific needs of this portion of the maritime industry.

Mrs. SULLIVAN. Thank you very much, both of you.

Mr. ROONEY. Thank you very much. You have been excellent witnesses.

[Whereupon, at 12 noon, the committee adjourned.]

MARITIME EDUCATION REGARDING SAFETY AT SEA

TUESDAY, NOVEMBER 19, 1974

HOUSE OF REPRESENTATIVES,
AD HOC COMMITTEE ON MARITIME EDUCATION AND
TRAINING OF THE COMMITTEE ON
MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The ad hoc committee met, pursuant to call, at 10:10 a.m., in room 1334, Longworth Office Building, Hon. Fred B. Rooney [chairman of the subcommittee] presiding.

Mr. ROONEY. Good morning. The committee will please come to order.

During the past several months, the Ad Hoc Committee on Maritime Education and Training has been conducting a review of the principal maritime schools in this country which prepare individuals for initial licensing as both deck and engineering officers aboard U.S.-flag merchant vessels. The ad hoc committee is in the final phase of its work and hopes to be able to report its findings to the full committee in the very near future.

It is obvious to me that any sound evaluation of our maritime schools must be made within the context of the national needs which are served by the various programs and types of training being offered by these institutions.

For this reason, earlier in this session, the ad hoc committee received testimony from the Maritime Administration of the Department of Commerce, on the numerical requirements of the U.S. merchant marine for licensed officers during the next decade; that is, the quantitative needs which must be met.

The ad hoc committee is meeting this morning to receive testimony from representatives of the U.S. Coast Guard on the qualitative needs which must be met, or more precisely, the relevancy of our present systems of maritime education to the critical demands of safety of life and property at sea.

For example, what steps does the Coast Guard take to determine whether an individual is capable of serving as a ship's officer?

What standards govern these determinations?

What minimum standards should govern the preparation of individuals to serve as officers in the U.S. merchant marine?

What is the relationship between these standards and the various systems of maritime education currently in existence?

We must be assured that the sweeping technological advances in the marine filed during the past two decades are being matched by personnel training which is adequate and germane to the tasks which our merchant marine officers will be called upon to perform now and in the future.

Our witness this morning is Rear Adm. William M. Benkert, Chief of the Officer of Merchant Marine Safety, U.S. Coast Guard.

Before I ask you to proceed, Admiral, I would like to welcome Mr. David Stewart and the students of Liberty High School in Bethlehem, Pa., of which I am a graduate. The advance placement class in American history is here today and I would like to take this opportunity to welcome them here to Washington.

Admiral, you may proceed as you wish.

STATEMENT OF REAR ADM. WILLIAM BENKERT, CHIEF, OFFICE OF MERCHANT MARINE SAFETY, U.S. COAST GUARD

Admiral BENKERT. Thank you very much, Mr. Chairman.

Good morning, ladies and gentlemen.

Mr. Chairman, I have a prepared statement of which I would like to read at the least the major portions, or proceed in any fashion that you choose.

Mr. ROONEY. You may proceed in your own way, Admiral.

Admiral BENKERT. Very well. The licensing and examination procedures of the Coast Guard, for merchant marine deck and engineering officers, have evolved over the years to meet the changing demands of maritime conditions. However, there have always been two general criteria to meet in order to qualify: A minimum required amount of actual sea service and successful completion of a qualifying examination.

With regard to actual sea service, our procedures contain provisions which allow for evaluation and acceptance of varying service on different types of vessels, foreign-flag service, military service, as well as substitution of approved training in lieu of some portion of this required service.

Basically, there is a four-license structure with licenses being issued in the grades of third mate, second mate, chief mate, and finally as master on the deck side.

Engineer licenses are issued as third assistant engineer, second assistant engineer, first assistant engineer and finally, as chief engineer.

In general, 3 years of service is required to qualify for an original license as third mate or third assistant engineer. An additional year of sea service is then required for each subsequent raise in grade of this license.

These required examinations are administered at 42 Coast Guard offices located in the major ports on all sea coasts, the Great Lakes and the inland river system. Licenses issued are valid for 5 years and must be renewed.

It might be pointed out that this renewal feature is almost unique to this country. Most other maritime nations endorse their licensed officers for life once a license has been issued.

Additionally, the Coast Guard is required to conduct an investigation when there is evidence of misconduct, negligence, inattention to duty, incompetence, or violation of statutes or regulations on the part of licensed or certificated merchant marine personnel.

For example, during the fiscal year ending June 30, 1974, all such investigations conducted resulted in 798 of a serious nature resulting in formal hearings before an administrative law judge.

These minimum standards which have evolved over the years have, for the most part, proven satisfactory. The requirements for sea service are generally adequate but not excessive and sufficiently flexible to meet changing operations in industry without unacceptable reductions in safety.

The question of examinations is perhaps more complex. The need for examinations is generally accepted but as to what constitutes a fair, reasonable, and valid examination there is much controversy.

The Coast Guard examination program, until very recently, had remained unchanged for many years. Although it had served its purpose well, it was evident that change and modernization were needed, and this was supported by increasing complaints from industry.

The recognized shortcomings and the complaints received indicated the following general faults:

(a) The essay-type examination in use resulted in too much subjective interpretation from port to port.

(b) It was inefficient for both the Coast Guard and the applicant, taking up to 2 weeks in some cases, or more, to complete.

(c) The examination material did not reflect the actual knowledge requirements of modern day practices.

With these facts in mind, the Coast Guard began work on a complete revision of examination procedures in 1969. As a result of these efforts, in which knowledgeable persons from industry have participated at every step, the first completely new examinations were introduced in January, 1974. A complete review of the first 6 months of this program was published in the October issue of the Coast Guard's "Proceedings of the Marine Safety Council."

I have copies of this article for your review and inclusion in the record if you so desire.

Mr. ROONEY. Without objection, it will be placed in the record at this point.

[The document referred to follows:]

A STATUS REPORT ON THE MERCHANT MARINE LICENSING EXAMINATION PROGRAM

[By Capt. J. V. Caffrey, U.S. Coast Guard, Chief, Merchant Vessel Personnel Division, Office of Merchant Marine Safety, U.S. Coast Guard Headquarters]

Early in 1974 the Coast Guard introduced a new type of license examination for Second and Third Mates and Second and Third Assistant Engineers. Many years of study and research have resulted in the revised examinations, which respond to a number of obvious needs.

The superseded examinations had been criticized because they did not reflect new developments in equipment, modern day practices, and current rules and regulations. Merely updating these examinations by replacement of archaic questions would not have insured a fair and uniform sampling of an applicant's knowledge. The subjective style of the procedure was open to criticism in view of today's demand for uniformity, objectivity, and efficiency. Moreover, a fully answered essay type examination was taking some applicants (particularly in the higher grades) as long as 2 weeks to complete.

With the advent and prevalence of the objective, standardized multiple-choice test, it seemed apparent that this was the preferred path. At the request of and in cooperation with the many facets of the maritime community, an entire revision was undertaken. By improving both the examinations and the training for them, it was hoped that the successful candidate would be better prepared to cope with the rapid advances in maritime technology and operations.

The corresponding examinations for Master, Chief Mate, Chief and First Assistant Engineer are also under revision, with an estimated date of completion around mid-1975. Examination time, in general, will be reduced by one-half.

Consultants in the development of the specifications included, among others, American President Lines, The Brotherhood of Marine Officers, Cleveland-Cliffs Iron Co., Gulf Oil Corp., Exxon, Interlake Steamship Co., International Organization of Masters, Mates and Pilots, Lake Carriers Association, Marine Transport Lines, Marine Engineers Beneficial Association Districts 1 and II, Mobil Oil Corp., Oglebay Norton Co., Prudential-Grace Lines, U.S. Coast Guard, U.S. Maritime Administration, Military Sealift Command, United States Steel Corp., U.S. Merchant Marine Academy and all State maritime academies. The test items were written by licensed officers, active or retired, who work or worked for these or similar organizations.

The examinations are administered on a monthly basis at a specified time. Each portion has a specified time limit. Candidates who fail the examination either completely or partially are allowed to retake the portion they failed at the next regularly-testing period. During the phase-in period and until January 1, 1975, the candidate has the option to be re-examined with the superseded essay type examination if he fails in his first attempt with the new multiple-choice test.

Early results indicate that as of early June 1974, of approximately 1,600 candidates tested, 68 percent of Third Mate, 44 percent of Second Mate, 51 percent of Third Assistant Engineers (steam and motor) and 19 percent of Second Assistant Engineers (steam and motor) who took the multiple-choice examination attained a passing score and received their license. Taken as a group, approximately 50 percent of those tested with a multiple-choice examination attained a passing score. Another 25 percent of the total candidates have received licenses as a result of exercising the option of being retested with the essay type examination, making the pass-fail percentage comparable to that experienced in previous years. Table I contains the statistical breakdown on the passing rate for each examination administered.

Phasing-in permitted the examinations to be introduced without obstructing operations. Accompanying the phasing-in process, Coast Guard officers have been holding examination conferences with various persons and groups who are involved in preparing individuals for careers as licensed officers in the U.S. Merchant Marine. The tests were reviewed to determine if they actually reflect a representative sample of the knowledge required of an individual holding a merchant marine license. To determine the validity of the examinations, conferences were held with the staffs of the following schools: Maine Maritime Academy, Massachusetts Maritime Academy, State University of New York, Maritime College, Texas A. & M. University, Texas Maritime Academy, U.S. Merchant Marine Academy, Marine Institute of Technology and Graduate Studies (MMP), School of Marine Engineering (MEBA II), Calhoun School of Marine Engineering (MEBA I), Page Navigation School, New Orleans, La., American Marine School, New Orleans, La., Captain Van & Co., Port Arthur, Tex., California Maritime Academy, Laws School of Marine Engineering, and Crawford School of Navigation.

The majority of individuals attending these conferences arrived with seemingly predetermined opinions that the examinations were less than valid. At the completion of the conferences all of those attending, with one or two exceptions, voiced the general opinion that the examinations were not at all as poorly prepared and inappropriate as applicant feedback had indicated. This general opinion was arrived at after the conferees had reviewed specific items which the candidates had difficulty in responding to correctly. Upon review, the attendees could find no fault with most of the items and offered such comments as, "If they don't know this, they shouldn't have a license," or "This exam is a giveaway", and "This is a very practical job relate examination."

Comments were also obtained from candidates just after they had taken the examination. The two primary comments of note received were the following: (1) There was nothing on the exam they had not expected. (2) There was nothing asked that a Second or Third Mate or Engineer should not be expected to know.

The above comments should not be construed to mean that the examinations as constructed are perfect measuring instruments. Comments and criticism from staff members of the various academies and from candidates will continue to be solicited and accepted for examination improvement. The primary complaints to date and the Coast Guard responses are as follows:

1. *Complaint:* Some items are vague, poorly worded, or have more than one correct answer.

Response: The examinations undergo analysis on a monthly basis using standard item analysis methods. If the item statistics indicate the candidates are having trouble with specific items they are thoroughly reviewed by a research psychologist and Coast Guard officers. If it is determined that an item is not valid, all candidates are given credit for a correct answer and the item is either eliminated from all future forms of the examination or is modified so that it is valid. No candidate, therefore, is penalized for answering a non-valid item incorrectly.

2. *Complaint:* The Navigation section of the mates exam is too long. It should be shortened or the time allowed to complete it should be extended.

Response: Present plans are that this section will be reduced to 25 items instead of the present 30.

3. *Complaint:* Portions of the exam involve too much theory. For instance, items concerning vessel design and construction are not appropriate for a second or third assistant engineer.

Response: All inappropriate theory questions will be removed from the exam.

4. *Complaint:* There was strong opposition to the 1 and 2 format questions. For example:

Proceeding into a harbor from sea, buoys which are to be left on your right or starboard side are:

1. Red
2. even numbered

A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

The correct answer is C since such buoys are both red and even numbered.

Response: Item statistics indicate that candidates generally score as well on this type of item as on others. However, the use of this format will be limited to those cases where a particular item of knowledge is to be tested and it is not possible to devel[illegible] four acceptable distractors.

5. *Complaint:* Rules and regulations questions are spread throughout the examination. This means that candidates have to intermittently get up and walk to where the publications are located.

Response: To alleviate this situation, every effort will be made to group these questions in the latter portion of each module in which they are applicable so that the candidate only has to make one trip to the publications.

6. *Complaint:* Some illustrations are unclear.

TABLE 1.—LICENSE EXAMINATION RESULTS—DECEMBER 1973 THROUGH JUNE 1974

Source of candidates	Original exams				Reexams		
	Pass	Fail	Partial failure	Total	Pass	Fail	Total
DECK OFFICERS							
3d mate:							
Unsponsored [1]	5	29	16	50	14	10	24
Maracad [2]	71	33	111	215	89	50	139
Total	76	62	127	265	103	60	163
2d mate:							
Unsponsored [1]	27	37	29	93	12	13	25
Other [3]	3	3	4	10	3	1	4
Total	30	40	33	103	15	14	29
ENGINEER OFFICERS							
3d assistant—steam:							
Unsponsored [1]	5	43	7	55	7	7	14
Maracad [2]	69	78	85	232	54	33	87
Other [3]	19	17	6	42			
Total	93	138	98	329	61	40	101
3d assistant—motor:							
Unsponsored [1]	0	22	4	26	3	4	7
Maracad [2]	82	76	74	232	57	34	91
Other [3]	19	11	7	37			
Total	101	109	85	295	60	38	98
2d assistant—steam:							
Unsponsored [1]	13	57	21	91	11	22	33
Other [3]	2	12	12	26	0	0	0
Total	15	69	33	117	11	22	33
2d assistant—motor:							
Unsponsored [1]	1	24	3	28	1	0	1
Other [3]	0	1	0	1	0	0	0
Total	1	25	3	29	1	0	1

[1] Those persons making application individually at local marine inspection offices and not sponsored by any particular organization.
[2] Includes the U.S. Merchant Marine Academy and all State maritime academies.
[3] Those applicants from joint management labor training plans.

Response: Unclear or poor illustrations are being replaced with superior illustrations whenever an exam module is revised.

7. *Complaint:* Mixing international and inland rules of the road in the Rules of the Road module is confusing.

Response: These items are now separated with the first 25 items being international rules and the second 25 items being inland rules.

8. *Complaint:* Applicants who fail are not informed of the specific areas within an exam module which they might study in order to have a better chance of passing the exam.

Response: Staff limitations prevent this from occurring on a regular basis. However, consideration is being given to computerizing this service in the future if the expenditure warrants it.

It is possible that deficiencies in the examinations have resulted in the failure of some marginal license candidates. This effect, because of the crediting for questionable items, must be considered minimal. In addition to unfamiliarity with this new type of examination and examination procedures, it is apparent that the following factors must share the responsibility for relatively high early failure rates on the new examinations:

(1) The various training institutions did not know exactly what to expect in this new exam, resulting in possible deficiencies in the course of instruction. For example, when the public was informed that rules and regulations would be an open book portion of the exam, some schools omitted rules and regulations from

the course of instruction. The result was that when an applicant had to refer to the regulations he either could not find the proper publication or, he could not interpret it in the correct manner.

(2) It is recognized, and accepted, that a number of maritime training institutions have expanded their curriculum to include much non-license oriented material. Very possibly some shifting of emphasis and priority has resulted in a lesser (professionally) prepared candidate. This becomes fairly apparent when viewing comparative scores. Candidates from the more purely professionally oriented institutions have had greater initial success with the new examinations.

(3) A number of applicants have taken the exam for the sole purpose of taking a look at it. It is hard to believe that candidates who obtain scores of less than 20 or 30 percent seriously believe themselves to be qualified to sit for a license. A person with no maritime knowledge whatsoever can attain scores such as these.

(4) The old examination material and procedures had become so familiar through the years that there was a tendency to study specific questions and answers. Some candidates may have come to rely so heavily upon this preparation that they find it difficult to study alternate sources of information dealing with the overall subject as opposed to the questions and answer approach.

Continued improvement in the examinations and adjustments on the part of schools and candidates to counteract these factors should increase the passing percentage. An improving trend is already apparent.

The construction of a valid licensing examination program is not an easy task. It requires the cooperation of all persons involved. This cooperation should result in valid professional licensing examinations which will ensure that only those candidates who are qualified will obtain their licenses. The merchant marine industry must be assured that all future licensed officers will be as highly qualified as those persons who are presently serving in the U.S. Merchant Marine. Future developments in the maritime industry, as well as research concerned with human error which is presently underway, may well dictate the need for including proficiency demonstrations as a prerequisite for certain licenses. The Coast Guard and MARAD will continue to rely heavily on the advice of industry in establishing standards for training and qualifying personnel.

Admiral BENKERT. It is planned to continue and expand this program to include all phases of licensing and certificating activities in an effort to provide the best possible qualifying procedures which are objective, efficient, fairly administered and truly reflect todays knowledge requirements.

Tables from the regulations which outline examination requirements for both deck and engineer officers are reproduced here, Mr. Chairman, for the committee's information.

Mr. ROONEY. Without objection, they will be made a matter of record at this point.

[The tables referred to follow:]

TABLE 10.05-45(b).—SUBJECTS FOR DECK OFFICERS OF OCEAN OR COASTWISE STEAM OR MOTOR VESSELS

Subjects	Master				Chief mate		Second mate		Third mate		Mate—Limited mineral and oil industry
	Ocean	Coastwise	Yachts	Limited mineral and oil industry	Ocean	Coastwise	Ocean	Coastwise	Ocean	Coastwise	
1. Latitude by Polaris	×	×			×		×				
2. Latitude by meridian altitude method	(1)	(1)	(1)		(1)	(1)	(1)	(1)	(1)	(1)	
3. Fix or running fix	×	×	×		×		×				
4. Star identification (any method)	×	×	×	×	×	×	×	×	×	×	×
5. Chart navigation	×	×	×		×	×	×	×	×	×	
6. Compass deviation	(2)	(2)	(2)		(2)	(2)	(2)	(2)	(2)	(2)	
8. Middle latitude sailing			×					×	×		
9. Mercator sailing	×	×	×			×	×				
10. Great circle sailing	×										
11. Piloting	×	×	×	×	×	×	×	×	×	×	×
12. Aids to navigation	×	×	×	×	×	×	×	×	×	×	×
13. Speed by revolutions	×	×			×						
14. Fuel conservation	×										
15. Instruments and accessories	×	×	×	×	×	×	×	×	×	×	×
16. Magnetism, deviation and compass compensation	×	×	×	× [3]	×						
17. Chart construction	×	×									
18. Tides and currents	×	×		×	×	×	×	×	×	×	×
19. Ocean winds, weather and currents	×	×	×		×		×		×		× [4]
20. Nautical astronomy and navigation definitions	×					×	×		×		× [4]
21. International and inland rules of the road	×	×	×	×	×	×	×	×	×	×	×
22. Signaling by international code flags and flashing light, lifesaving, storm and special signals	×	×		× [3]	×	×	×	×	×	×	× [5]
23. Stability and ship construction	×	×		×	×	×					
24. Seamanship	×	×	×	×	×	×	×	×	×	×	×
25. Cargo stowage and handling		×		×	×	×	×	×	×		×
26. Change in draft due to density		×			×						
27. Determination of area and volume						×	×				
28. Lifesaving apparatus and firefighting equipment	×	×	×	×	×	×	×	×	×	×	×
29. Ship sanitation	×	×			×						
30. Rules and regulations for inspection of merchant vessels	×	×	×	×	×	×	×	×	×	×	
31. Laws governing marine inspection	×	×		×	×	×					
32. Ship's business	×	×		×							
33. Such further examination of a nonmathematical character as the Officer in Charge, Marine Inspection, may consider necessary to establish the applicant's proficiency	×	×	×	×	×	×	×	×	×	×	×

[1] Sun or star.
[2] Sun.
[3] Anybody.
[4] Practical use of the magnetic compass.
[5] Lifesaving, storm, and special signals.
[6] Navigation definitions only.

TABLE 10.10-4(b)—SUBJECTS FOR ENGINEER OFFICERS' LICENSES OF STEAM OR MOTOR VESSELS

Subjects	Steam				Motor			
	Chief engineer		Assistant engineer		Chief engineer		Assistant engineer	
	Over 2,000 hp	2,000 hp and less	Over 2,000 hp	2,000 hp and less	Over 2,000 hp	2,000 hp and less	Over 2,000 hp	2,000 hp and less
GENERAL								
1. Pumps and compressors	X	X	X	X	X	X	X	X
2. Heat exchangers	X	X	X	X	X	X	X	X
3. Propellers and shafting	X	X	X	X	X	X	X	X
4. Steering and miscellaneous machinery	X	X	X	X	X	X	X	X
5. Valves—reducing, control, etc	X	X	X	X	X	X	X	X
6. Condensers, air ejectors and vacuum	X	X	X	X				
7. Engineering definitions and principles	X	X	X	X	X	X	X	X
8. Instruments	X	X	X	X	X	X	X	X
9. Lubrication	X	X	X	X	X	X	X	X
10. Inspection	X	X	X	X	X	X	X	X
11. Mathematics	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X
12. Sketch		X	X	X		X	X	X
13. 3 dimensional drawing	X				X			
14. Ship construction and repair	X	X	X	X	X	X	X	X
STEAM ENGINES								
21. Reciprocating—construction, operation, maintenance	X	X	X	X				
22. Turbine—construction, operation, maintenance	X	X	X	X				
23. Reduction gear and miscellaneous	X	X	X	X				
24. Steam governors	X	X	X	X				
MOTOR								
31. Construction, operation, maintenance					X	X	X	X
32. Operating principles					X	X	X	X
33. Fuel injection					X	X	X	X
34. Air compressors					X	X	X	X
35. Operation and maintenance of auxiliary diesel engines	X	X	X	X				
36. Air—starting, combustion					X	X	X	X
37. Governors					X	X	X	X
BOILERS								
41. Watertubs—construction, operation, maintenance	X	X	X	X	X		X	
42. Firetub—construction, operation, maintenance	X	X	X	X	X		X	
43. General—construction, operation, maintenance	X	X	X	X	X		X	
44. Safety valves	X	X	X	X	X		X	
45. Corrosion and feedwater	X	X	X	X	X		X	
46. Fuels and combustion	X	X	X	X	X		X	
ELECTRICITY								
51. Direct current	X	X	X	X	X	X	X	X
52. Alternating current	X	X	X	X	X	X	X	X
53. General—switchboards, controls, wiring	X	X	X	X	X	X	X	X
54. Storage batteries	X	X	X	X	X	X	X	X
55. Electric drive	X	X	X	X	X	X	X	X
56. Problems	X	X	X	X	X	X	X	X
REFRIGERATION								
61. Freon—construction, operation, maintenance	X		X		X		X	
62. Definitions and principles	X		X		X		X	
ENGINEERING SAFETY								
71. Fire prevention	X	X	X	X	X	X	X	X
72. Fire equipment	X	X	X	X	X	X	X	X
73. Fire fighting	X	X	X	X	X	X	X	X
74. Respiratory apparatus and emergency equipment	X	X	X	X	X	X	X	X
75. Casualty and damage control	X	X	X	X	X	X	X	X
76. Rules and regulations	X	X	X	X	X	X	X	X
77. Safe handling of flammable and combustible liquids	X	X	X	X	X	X	X	X

[1] Each candidate will receive a minimum of four mathematical questions which shall be graded with the "general" subject, however, a minimum grade of 70 percent shall b required for mathematics.

Admiral BENKERT. A recently published book, "Occupational Licensing: Practices and Policies," which is based upon a report prepared under contracts with the Manpower Administration, U.S. Department of Labor, provides an overall review of licensing procedures as they existed at the time the studies which began in 1967 were conducted.

One short quote perhaps seems appropriate:

> * * * do well to review what the Federal Aviation Administration and the United States Coast Guard are doing to insure that the candidates they license possess at least the minimum qualifications to perform their duties safely. Despite their short comings, both of these programs are aimed at objective assessment of each applicant.

I think my statement should simply say we are endeavoring to improve our methods of achieving just that objective.

The maritime industry remained relatively unchanged after the advent of the steamship until the 1950's. About this time, new and innovative approaches to the problems of propulsion and to the handling of cargo began to follow one another in rapid succession.

As a result, the modern-day ship's officer may be called to serve upon a bewildering array of special purpose ships with special equipment.

Although the Coast Guard is revising and improving our traditional personnel qualification procedures, we, quite frankly, are not fully convinced that they will prove completely satisfactory in all cases.

There is an obvious need for some type of measurable proficiency demonstration in certain critical skill areas due to special purpose ships carrying special cargoes.

I do not need to call your attention to the problems attendant with liquefied natural gas carriers (VLCC's), or proposed nuclear vessels. Obviously, we need to be as innovative as the naval architects if we are to properly qualify the man in the system.

It was with these facts in mind that the Coast Guard and the Maritime Administration signed a policy statement on September 6, 1974, which commits the two agencies to cooperative efforts in insuring adequately qualified crews in the critical skills areas demanded by todays vessels.

The Coast Guard would continue to issue basic licenses to deck and engineering officers on the basis of experience and examination. However, qualification for certain key personnel in certain critical operations would require successful completion of an overall qualifying course.

Such course would consist of training combined with the necessary quizzes, end of course examination, et cetera, required to determine successful completion as well as proficiency demonstrations by use of simulation, where appropriate.

This interagency cooperative effort should insure the most effective use of funds and resources available.

In this regard, the Coast Guard, and I am sure the same is true for MARAD, are most anxious to work with existing training institutions; Kings Point, State maritime academies, and various industry training programs in developing, approving, and monitoring such qualifying courses to insure they are available to all who require them at reasonable cost.

The various maritime programs which are currently in existence generally seem to adequately prepare their students for the basic licenses. Some, of course, are more successful than others in passing the Coast Guard examination and some have a better retention rate than others.

On the whole, we feel the balance between academic training and sea experience which is acceptable in each case results in officers who do, in fact, possess the minimum acceptable level of knowledge to perform safely.

However, as the maritime industry becomes more complex, there is a growing need for training courses in new critical skills as well as periodic retraining in certain areas.

Our casualty investigations in recent years show this is a very real problem. Eighty-five percent of all casualties from our records, involve human error to some extent. Admittedly, as long as men are involved in an operation, human error of some sort may well contribute to many casualties. However, few casualties result from a single mistake, but rather from a series of small errors, and the elimination of any one of these errors could well prevent the casualty.

Obviously, the improvement of professional skill levels holds great promise for a reduction in vessel casualties.

It is in this area of special training in critical skills and in periodic retraining for the man already at sea that our maritime programs are most lacking. Only recently has any effort been made in this area and results are most encouraging.

The safe operation of U.S.-flag vessels is, of course, the primary concern of the Coast Guard. However, since only a very small percentage of our foreign commerce is carried in U.S.-flag vessels, about 6 percent of the total tonnage at this time, there are many more major foreign vessels in our waters each day than our own.

Considering the numbers of these vessels operating in and out of our ports it becomes apparent that international standards are also necessary to insure the safety of our harbors and coastline.

The Coast Guard, as the representative of the U.S. Government at meetings of the Inter-Governmental Maritime Consultative Organization, is working toward this goal.

This specialized agency of the United Nations, concerned solely with maritime affairs, has been engaged in developing acceptable international standards for ship design and construction for many years. Only recently, however, have they begun to consider the problem of international standards for crew qualifications and training with the establishment of a new subcommittee entitled "Standards of Training and Watchkeeping."

The Coast Guard has participated and will continue to participate fully in all the work of IMCO.

Although there is a great deal of information recorded on seamen, it is not presently in a form that can be readily retrieved. The National Archives and Records Service recently completed a study of the seamen's records maintained by the Coast Guard. The final report is not yet complete, but it will contain recommendations concerning modifications necessary to allow conversion to automatic data processing equipment, which would then allow ready retrieval and manipulation of information.

Implementation of the recommendations is, of course, dependent upon resources we have available. If such a system were to be implemented, it is planned that the Coast Guard would then be able to use all pertinent information—source, examination score, age, formal education, training, experience, et cetera, in assessing personnel data to substantiate future proposals for regulatory action, and I might add for licensing and certificating adjustment.

In conclusion I might say that the Coast Guard also issues a series of miscellaneous licenses for small passenger vessels, towing vessels, and the like.

Mr. Chairman, I will be pleased to try to answer any questions you or members of the committee may wish to ask.

Mr. ROONEY. Thank you, Admiral, for a very informative statement.

I think we would all agree that proper training of our shipboard personnel is fundamental to collision avoidance and to the safety of life and property at sea, but opinions differ concerning which system of maritime education best prepares our ship officers to meet this overall objective.

From the point of view of safety, Admiral, what are the merits of the 4-year college program?

Admiral BENKERT. Well, I would think, sir, that a 4-year college program, provided of course that it contains the proper technical concentration during the course of these 4 years, has a great deal of merit.

Mr. ROONEY. How about the merits of the shorter program of more technical concentration?

Admiral BENKERT. Well, I think that you could from a purely technical point of view, sir, condense a 4-year course into a shorter period of time to provide the individual with the technical requisites that are needed. I think between the two of them, technical coverages are for the most part, roughly the same.

The 4-year course, of course, provides additions over and above technical considerations.

Mr. ROONEY. How do the graduates of these programs compare in their shipboard performance?

Admiral BENKERT. I think our experience shows roughly the same as far as their technical competence toward performing a job at sea.

Mr. ROONEY. You have referred to the increased violations and you have stated that 85 percent of the casualties at sea are due to human error.

I cannot believe this is possible with all of the devices that we have on ships and I have seen many of them, with our sophisticated radar devices, et cetera.

Do they not help eliminate some of these problems?

Admiral BENKERT. Yes, sir, I think they certainly do. The installation of radar for example, and proper utilization aboard a vessel is certainly a very great boon to safe navigation of that vessel.

I do think that coupled with the technical advances in the use of the provision of advanced equipment, there are some things that have to go along with that in order to provide the additional safety which you are striving for. For example, the individual using the equipment must be trained in how to properly utilize the equipment. The equipment itself must be properly maintained in good condition to provide what it is installed for.

I think there is a mix here between providing, and perhaps in many cases requiring, advanced equipment on vessels and at the same time insisting upon the training of individuals and the qualification of individuals who are going to use that equipment to do just that properly, sir.

Mr. ROONEY. Does the Coast Guard make annual or random inspections of this equipment?

Admiral BENKERT. Yes, sir, we do inspect equipment depending upon the type of vessel that is involved, sir. We inspect and certificate the vessels themselves and we examine the equipment, its presence, and in some cases its operating capabilities.

I might add, Mr. Rooney, that we are requiring in some cases, a number of items of what you might call the most modern, up-to-date navigational equipment. For example, we are presently evolving regulatory requirements looking toward required provision of this type equipment aboard certain vessels and a consequent requirement for the maintenance and upkeep of this equipment.

Mr. ROONEY. You refer to the fact that in order to qualify for initial license examination as either a deck or engineering officer, the individual must have completed a certain period of sea service.

How much time aboard a training ship satisfies the Coast Guard's requirements?

Admiral BENKERT. As I recollect, I think a 6-month period of time aboard a training vessel satisfies the sea requirements, sir, and I think, on commercial vessels, we require a slightly longer period of time, 10 months, because of the operation of the commercial vessel.

Those are the basic figures, sir.

Mr. ROONEY. What is the reason for requiring a longer period on a commercial vessel?

Admiral BENKERT. On commercial vessels, yes, sir—on the training vessels, you are concentrating during that particular 6 months period of time, whereas on a commercial vessel there are other operations in port for example, but hoping to get the same end result out of the two periods of time, sir.

Mr. ROONEY. How often does the Coast Guard assess the relevancy and the adequacy of the curricula of these various schools to prepare the Merchant Marine officers to meet the ever-increasing demands in such areas as pollution prevention, pollution abatement, firefighting, and the operation of large tankers and the newer nuclear tankers?

Admiral BENKERT. Well, I think probably the best answer to that, sir, would be that we maintain a constant running relationship with all of the schools that operate in this field.

I have with me, Captain Caffrey, who is the Chief of our Merchant Vessel Personnel Division here in Washington.

Captain Caffrey has a staff of officers and other personnel working for him here in Washington, a number of whom have a specific job of maintaining an ongoing relationship relative to all of the educational institutions in this business; a constant look at courses, a constant rapport, and discussions with the people that are involved directly with the running of the academies and other schools.

I think also in our field marine inspection offices which are located in areas where schools are located, again there is another, at a local level, very close work maintained in looking at the courses on our part,

particularly in trying to assist and in some cases steer the courses looking toward technical competence for the graduates, sir.

Mr. ROONEY. At Kings Point they have a dual program for the deck and engineering officers. What are the merits of this program?

Admiral BENKERT. Well, we feel, sir, that this has very good merits in that during the time that the individual spends at the institution undergoing this dual course, he gets a technical competence in both the deck and engineering fields which no matter what he does later on will serve him in good stead because of the other knowledge he is getting that he may not be utilizing directly at the time he is working in a particular capacity.

Mr. ROONEY. Do you believe all of the schools should have this type of program?

Admiral BENKERT. Well, I think it presents some problems, Mr. Chairman, because I think in some cases the individuals would be better steered toward a specific part of the program, either deck or engineering, and I think the big problem is that once the individual has gone through the training it is difficult for him to work in both capacities abroad our vessels.

Our structure is such that he normally works as a deck officer or as an engineering officer and I think from an experience and capability viewpoint it is difficult to keep both ends going at the same time.

Let me put it this way, sir; I think that basically the concept of a 4 year schooling encompassing this dual course is very good for the people concerned, for their overall knowledge.

I do think that other than that, that perhaps from a technical point of view and a future operations point of view, the individual is perhaps better steered in one direction or another, sir.

Mr. ROONEY. How often do you inspect the training vessels of the maritime schools?

Admiral BENKERT. We inspect their vessels each year, sir, and I might say that is what we call an inspection for certification, full-scale inspection.

Mr. ROONEY. What is the life expectancy of these vessels?

Admiral BENKERT. I think probably the people running the schools could give you a better answer to that, Mr. Chairman, because to my knowledge, their vessels that are used in the programs today, most of them are not new vessels, so it is sort of difficult to give a life expectancy.

The vessels presently in use are mostly older vessels in the programs.

Mr. ROONEY. I believe the superintendents of some of the schools we visited said the life expectancy of their vessels was 20 years.

Admiral BENKERT. Well, I would hope it would be that way and that the vessels would remain in good condition for that period of time, sir.

I must perhaps disagree in some cases because some of the vessels that have been used and are presently used in the training programs are of World War II vintage. That is a long time for the vessels, sir.

Mr. ROONEY. Mr. Fersythe?

Mr. FORSYTHE. Thank you, Mr. Chairman.

Thank you, Admiral, for your presentation this morning. I have a few questions that I would like to ask in order to expand my knowl-

edge regarding your activities. With respect to the uniqueness of our system of renewing licenses, is it done upon reexamination or is it done on a routine basis?

Admiral BENKERT. Well, I would call it partially routine and partially a reexamination, sir. For example, with the deck licenses we issue a basic license for a period of 5 years.

When the individual comes in for renewal, if he has been sailing on the license we require him to take a rules-of-the-road refresher, just to make sure he is up to date on the functioning of the rules of the road which we feel are of paramount importance for a deck officer.

If he has not been sailing on the license during that period, then we give him a full-fledged examination on the rules of the road.

With the engineering officer license our approach to this is one of basic routine. He comes in and has to renew his license. We do not give him an examination for renewal of his license, sir.

We do see him, however, and I think this is important. We do see the individual. If, for example, he has an obvious physical infirmity or something of that kind when he comes up for renewal, and this is apparent, then we can take some action predicated on that.

Mr. FORSYTHE. But you do not in the engineer's case tie in the use of that license? In other words he could have had the license and not used it for 5 years and it would be renewed without any reexamination?

Admiral BENKERT. Yes, sir. I might add, sir, we do have some other requirements pertinent to certain deck licenses. For example, radar endorsements, in which we require a man to update and refresh his knowledge. Also, when he comes in for a license renewal we do give him today, because of our emphasis on environmental efforts, a quick open-book-type refresher exercise in our pollution laws and antipollution requirements on vessels.

Mr. FORSYTHE. Coming back to the engineering officers, in view of the sophistication that you mention in your statement you really are not checking those licensees as to whether they have updated themselves in this sophistication involved below deck, are you?

Admiral BENKERT. That is true, sir.

Mr. FORSYTHE. You mention that you had investigations resulting in 798 formal hearings before an administrative law judge.

Admiral BENKERT. Yes, sir.

Mr. FORSYTHE. Do you have any statistics as to how many of those investigations result in withdrawl of licenses or punitive action?

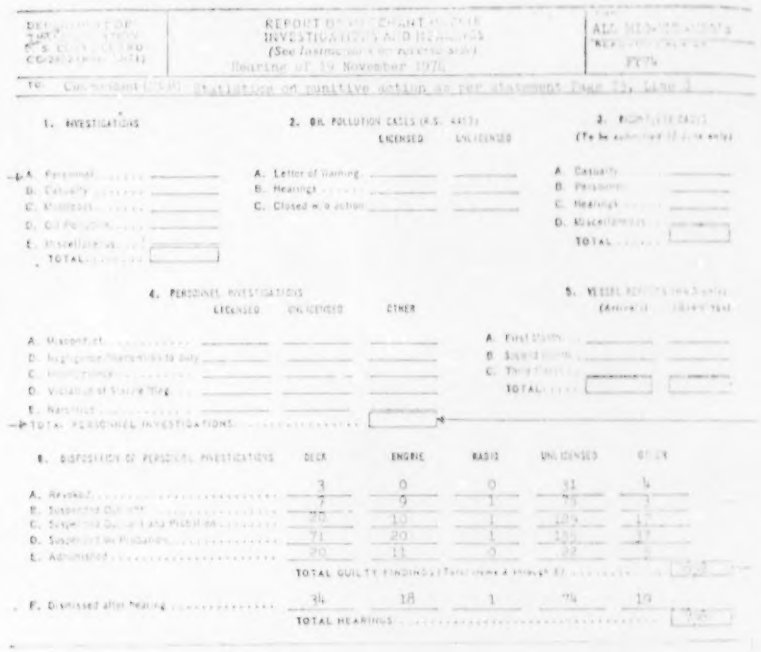
Admiral BENKERT. I could provide this for the record, sir, if you like. I do not have this information with me.

Mr. FORSYTHE. It seems to me it ties back with your renewal program and what is the caliber of our licensee in maintaining a high level of efficiency in his job. I would appreciate your providing that.

Admiral BENKERT. Yes, sir.

Mr. ROONEY. Without objection, so ordered.

[The information to be supplied follows:]



Mr. FORSYTHE. As to the 4-year program that you discussed with the chairman, I believe some of our service academies are moving into these programs.

It seems to me that your response to the chairman dealt specifically with the basic qualifications for licensing, that it was 2 years for the basic training which most of the academies were giving.

Do you believe in these times with the greater sophistication that the movement toward the 4-year program really provides us with better qualified officers.

Admiral BENKERT. Yes, sir; I do. I feel that any 4-year program properly constituted should provide a better individual than a 3-year program.

I personally feel quite strongly that in the 4-year programs that an individual gets a rounded education in addition to a purely technically concentrated course, and I think for the individual and for the merchant marine that in the long pull this is very helpful, sir. I think you do get a better rounded individual.

Mr. FORSYTHE. Would you believe that the expansion of the dual course system at Kings Point into the other academies would really be a plus?

It seems to me that a deck officer, particularly a master of a vessel, ought to know what is going on below decks and how that operates and the same thing would be true in the reverse order.

It seems to me it was greater at Kings Point, but you kind of left it there and did not think that the Coast Guard was in front pushing or recommending that kind of thing.

Admiral BENKERT. I think on an educational basis, sir, for the individual concerned and for his future aboard vessels, that if he is capable of standing the added burden academically during that 4 years, and it is an added burden for the individual, I think this is very highly desirable.

I do feel, however, that in some cases of individuals, the attempt to take on this added academic burden can create some problems and once he gets out of the institution, of course, he is normally going to be funneled one way or the other. I do think, however, having this in his background is very helpful to him and to the industry.

Mr. FORSYTHE. Probably for instance competence for licensing in one area but a general knowledge in the other is perhaps more sophisticated than coming to full licensing. Would that be a fair statement?

Admiral BENKERT. I would say so; yes. I would think anything he could get along that line would be very helpful to him and the industry.

Mr. FORSYTHE. In the area of actual time at sea you mentioned you deem 6 months on training vessels to be adequate. It seems to me with a direct liaison with the Academy that the concentration in all the facets of ship operation can be structured into that time, but how do you handle it on commercial ships where you might have greater problems of assuring that the applicant is going to really be getting a full orientation in the whole area of needed competence?

Admiral BENKERT. Well, I think the best way to respond to that, sir, might be that service aboard the commercial ships, with the added time, the individual will get the experience and the background that he needs and on the commercial vessels we do have projects which the individual must complete.

In other words, he is not just spending his time there. There is a program involved in this, sir.

Mr. FORSYTHE. That the master of the vessel must see that these applicants will be confronted with?

Admiral BENKERT. Yes, sir.

Mr. FORSYTHE. And they will be examined on that following the sea time?

Admiral BENKERT. Yes, sir.

Mr. FORSYTHE. I think that is all. Thank you.

Mr. ROONEY. Although our distinguished colleague from California is not a member of this ad hoc committee he has made a very substantial contribution to the committee and I welcome Mr. Anderson here today.

Mr. Anderson, I know that you are very interested in the California Maritime School and perhaps you might have some questions.

Mr. ANDERSON. Thank you, Mr. Chairman. I am just listening today, I am very interested in the maritime schools in California; however, I have no questions.

I thank you, Mr. Chairman.

Mr. ROONEY. Thank you.

Admiral, does the Coast Guard have any requirements concerning the ratio of instructors to students aboard these training vessels while at sea, and if they do what is the ratio?

Admiral BENKERT. We have no requirements for this, sir.

Mr. ROONEY. You see no need for any requirements?

Admiral BENKERT. From our point of view, no, sir. I do not because I feel that we have very highly developed and competent

institutions. With the people that are running them we maintain a very close contact, also with their courses, their scope, and their work and I feel that the people who are running the schools are certainly just as interested as we are and are certainly prepared to provide the proper number and adequacy of the instructor personnel for their own institutions.

Mr. ROONEY. You know, some of the State maritime schools that we have visited thus far are really on a bare bones budget and one of the superintendents suggested that the Coast Guard should permit the Academy to carry cargo as well as passengers on some of these training cruises around the world.

Admiral, what do you think of that suggestions?

Admiral BENKERT. Well, it creates some problems, but I see nothing wrong with that concept, Mr. Chairman.

Let us take passengers, for example. By law and by regulation which have been developed over a number of years and I think properly developed, we have for passenger vessels more stringent requirements that are applicable to the vessel than we do on other types of vessels, and because of this specific passenger carriage, and our interest in making sure that when a vessel carries passengers, it must be completely 100 percent top notch.

We have some international agreements relative to passenger vessels which we must abide by.

The training vessels that we have in many cases are not specifically designed for the carriage of passengers in a number of respects, and some of the vessels have had problems in complying with some of the regulations which apply to passenger vessels.

Basically, we have no argument with the concept, sir. It is simply a matter of making sure that the vessel that they want to use for this purpose is properly equipped and designed for that purpose.

Mr. ROONEY. And, of course, you stated earlier that they are mostly World War II vessels. Two I believe were commissioned in 1952.

In view of their age, what do you think about the use of simulators as an alternative to training ships?

Admiral BENKERT. We think this is a very great advancement that has developed in recent years, Mr. Chairman.

Mr. ROONEY. Have you thought about this? Have you come up with any kind of a simulator? Have you thought about it at all?

Admiral BENKERT. Well, I think the big thing that we have in development from our point of view, sir, is our cooperative effort with the Maritime Administration.

The Maritime Administration, as an example of this simulator concept, is developing at their research facility located at Kings Point a very sophisticated concept of simulating shipboard conditions of all types.

We are intending, once they have this operating, to participate and to jointly use this, or the type of purpose you are inquiring about, sir.

At the present time I think an example might be the school operated by the Masters, Mates, and Pilots organization which has a very fine simulator installation for navigational purposes at their school near Baltimore.

There are simulators involved now in every training institution and we feel that these are excellent, very highly desirable.

We feel that there are some limitations to them, however. We feel you still need a certain amount of time aboard a vessel operating, but simulators certainly go hand-in-hand with qualification and are very good.

Mr. ROONEY. I believe two of the State maritime schools that we visited had a sandwich type program. They send their students to sea on the training ship for the first and third year, and the second year is spent on a commercial ship.

What is your opinion of this type of program, Admiral?

Admiral BENKERT. I think it is very good, sir.

Mr. ROONEY. You think all schools should embark on this type of program?

Admiral BENKERT. I think they should certainly take a look at it depending on their circumstances. Yes, sir, I think this is a very good program.

Mr. ROONEY. Any further questions?

Miss McDonnell?

Miss MCDONNELL. Thank you, Mr. Chairman.

Admiral, do you know what the average age of the officer aboard ship is at the present time?

Admiral BENKERT. I would have to check. I can give you that later for the record. I think we can make a pretty good stab at it, but it is kind of difficult because you know people are coming and going all the time in our merchant marine. It is kind of a hard figure to come up with. We can try and make a stab at it for the record if you like. It is a little difficult.

May I add we might give you a figure today but 3 months from now we would be forced to give you a different figure if we were trying to keep it completely up to date.

Miss MCDONNELL. Just an approximation will do.

Admiral BENKERT. We can give you a ballpark figure.

[The following was submitted:]

TABLE 9.—SEAMEN'S EMPLOYMENT ANALYSIS, NATIONWIDE MEDIAN AGES

[Including Great Lakes, 1962-63 to 1970, and 1972]

	Licensed deck	Licensed engine	Radio	Staff	Unlicensed deck	Unlicensed engine	Cooks and stewards	Others[1]
Year								
1962-63	45.2	47.3	48.2	42.7	39.9	43.1	47.2	
1966	45.0	45.6	48.1	42.4	39.1	42.3	45.4	37.4
1967	45.2	46.8	48.3	43.6	41.8	44.3	46.5	42.0
1968	45.1	46.8	47.9	44.2	41.7	43.3	45.6	38.6
1969	45.4	46.7	48.4	45.0	42.1	43.4	45.9	40.6
1970	45.9	47.0	49.1	45.9	43.7	44.7	47.9	41.3
1972	47.1	48.0	49.9	47.1	45.1	46.3	49.0	38.0

[1] Includes medical, nuclear and other classifications.

Source: Office of Maritime Manpower, Maritime Administration, Department of Commerce. From a Study by Maritime Transportation Research Board, date September 1974, "The Seagoing Workforce."

Miss MCDONNELL. What is the new information that you state you are having programed? Does that mean you are going to be expanding your basic information concerning the officers aboard ship or does this just refer to a reprograming of your existing information?

Admiral BENKERT. Well, what it means to us is that we will be able to retrieve information on individuals that are serving in our Merchant Marine so that, for example, we would be able to equate certain individual characteristics versus casualties with some capability of being able to do this which we have not had in the past.

For example, if we had information at our fingertips we might find out that certain types of individuals or perhaps a certain age bracket are more prone to something happening than individuals in another age bracket. I just cite this as a type of example that if we were able to readily retrieve all of the information that we do have on paper relative to individuals serving in our Merchant Marine it conceivably might be very helpful to us in appraising these individuals and perhaps appraising training of these individuals and their utilization in the Merchant Marine.

Miss MCDONNELL. Thank you.

Mr. ROONEY. Mr. Bedell?

Mr. BEDELL. Admiral, I want to thank you for your testimony this morning.

Mr. Forsythe raised questionings having to do with your reexamination of applicants for renewal of licenses. On page 6 of your statement you gave us a quote there from a recently published book which complimented the Coast Guard on its objectivity in assessing applicants and compares your program to that of the FAA.

Have you given any thought to adopting any other components of the FAA reexamination program such as physical examinations?

You mentioned there were some obvious physical difficulties in the course that have not been tested out, but do you think it would be advisable to have a physical examination for vision or heart problems and that sort of thing?

Admiral BENKERT. Well, I think we have over the years looked at this question very extensively.

Would you like to say something on this, Captain Caffrey? I am deferring because Captain Caffrey would have at his fingertips our latest efforts in regard to the subject of physicals. We have had an ongoing legislative effort in this field for a number of years.

Perhaps you would like to say something, Captain Caffrey.

Mr. ROONEY. Please identify yourself for the record.

Captain CAFFREY. Capt. John J. Caffrey, Chief Merchant Vessel Personnel Division, U.S. Coast Guard.

In our renewal or revalidation efforts which take place every 5 years, we are working with tools which, were they to be broadened or expanded, would perhaps be more effective today.

I think we have the basic authority. I will say this, that when an individual comes in to renew his license he must appear before a Coast Guard officer who will physically "eye" him. He will ask him is he in good health. He will require that he pass a color blindness test if he is a deck officer. The same thing would apply to an engineering officer to the extent that what he can observe he can then take the second step on.

If there is any indication that there would be some lessening of this individual's capabilities or if there is any evidence of infirmity, there is existing authority to go through a full scale physical examination.

I feel that probably what is needed is when we are able to analyze our statistics more thoroughly and come in and zero in on certain things that we can then take the attendant action that is indicated.

I believe we do have this capability and authority. It is not something that we are overlooking. It is something that is being studied and being reviewed and we are well aware of the need to continue on in this direction. I think our whole thrust in this qualification of people is directed at the existing mariner more than the embryo.

I know you are looking at training programs and, of course, they are most important and in general we feel that they are adequate. We are getting a good product.

Where we have to place renewed emphasis is on continued capabilities and what we are trying to introduce in every way we can is this refresher, retraining concept and it is progressing. I will not say we do not have problems with it, but it is the feature that we are giving our emphasis to perhaps more than to the initial indoctrination of the individual.

Mr. BEDELL. Thank you.

Admiral BENKERT. May I add one thing to that, that I think may be pertinent. In our agreement with the Maritime Administration which I think I discussed a little earlier in my statement, we have tried to pinpoint the portion of what Captain Caffrey just said which we feel is very important and where we feel that we have not made the strides that we should have in this retraining concept, and I think we have one paragraph in that particular agreement which might be well worth reading. This paragraph is a part of our agreement with the Maritime Administration and we both feel the critical areas in which supplementary qualifying instructions are considered essential are vessel navigation in restricted waterways including ice pilotage, handling of very large crude carriers with immediate emphasis on radar usage, firefighting, damage control, cavriage of chemicals, liquefied gases and other noxious products, pollution abatement and prevention, lifeboats and lifesaving equipment, tanker operational safety, automated propulsion plants, and nuclear vessels.

What I am trying to say, sir, is simply that we have tried to pinpoint areas in which we feel that this retraining concept, the updating of individuals, is very pregnant.

Mr. BEDELL. We are interested in continuing or post-graduate training too. Certain of the institutions we visited are planning graduate programs or advanced programs and we feel that it is part of our mission to examine those programs.

I would like to followup, Mr. Chairman. You mention tow boats as one of the miscellaneous certification programs you have.

There are dangerous cargoes on our rivers, and we have had some recent accidents involving tow boats. I am interested in knowing whether there is any prescribed training for tow boat operators and masters and how you feel about your licensing program in that area, in general.

Admiral BENKERT. I think the first thing to be said on that subject would be that only recently have we been able to obtain what we feel is highly desirable and most appropriate legislation requiring the licensing of operators of what we term uninspected tow boats.

This applies, sir, to the vast majority of towing vessels both river and harbor that operate in our waters. This licensing program has been going on for the past year now. We feel that it is a real strong progressive step toward better qualification of the individuals operating these vessels on our waters.

There is the National River Academy at the present time which is geared specifically to the training of personnel for this type of operation.

I guess the best way I could put it, sir, is simply to say that particularly within the last several years, due to perhaps in some respects the casualties which you have mentioned, there has been a very good effort jointly between the industry, all facets, and the Coast Guard, looking toward better qualification of the people that are in that industry.

Mr. BEDELL. I understand that examinations are given orally, is that true?

Admiral BENKERT. Yes, sir, we give oral examinations for certain of the applicants for tow boat operator licenses primarily because a number of the people that are in that industry are not highly educated, have difficulty in writing and in responding to a formal written type examination, so we give oral examinations which we feel are quite satisfactory.

Mr. ROONEY. Would the gentleman yield at that point?

Mr. BEDELL. Certainly.

Mr. ROONEY. What efforts are being made on the international level to upgrade the level of competence of marine personnel, to follow up on this question?

Admiral BENKERT. Well, to give you a brief discussion on that, Mr. Chairman, I think I could say that the Coast Guard, and I mentioned this very briefly in my statement, represents the U.S. Government in the forum known as IMCO, the Intergovernmental Maritime Consultative Organization.

In recent years, this subject of training and standards for watchkeeping personnel aboard vessels has come to the fore. I think it is because of casualties that have occurred and the obvious need for some type of minimum standards for these personnel worldwide.

The Coast Guard attends, along with other members of the marine industry, meetings of the Subcommittee on Training and Watch Keeping Standards at IMCO on a continuing basis. As a matter of fact, Captain Caffrey has been our U.S. representative at this subcommittee for the past 3 years and we are trying to develop international standards of qualification and capability for the individuals who are operating merchant vessels, worldwide.

We think this is very important, because as I mentioned before in the statement, the majority of large vessels that operate in our waters today are foreign flag vessels and we are, of course, very interested that their people be properly qualified in operating in our waters in particular.

Mr. ROONEY. Perhaps Captain Caffrey can answer this question inasmuch as you do represent the Coast Guard at these sessions.

How do we compare as far as maritime education in this country with other countries?

Captain CAFFREY. My impression, sir, is that we compare very favorably. Our style is perhaps different in that most of the leading foreign maritime countries use the apprentice type of program. They get a young individual and they introduce him into a system and they work with him right up through his completion of whatever their desired course is and he is provided with a diploma, really an educational diploma in that maritime field.

It is perhaps a more intensive effort on their part in the entire direction. However, I think our approach, which is a little bit broader insofar as the total educational concept, I think we provide something greater to build on in the future.

Our Academy graduate, whether he be from Kings Point or a school ship, is an individual that can grow. He has been given all the tools for growth and we can expect anything that we want from him.

I would think that just on that comparison we do shape up very well and I am not at all disappointed in the comparison.

Mr. ROONEY. We are very pleased to have the chairman, Mrs. Sullivan here today. Although she was not here for your presentation she has read it, and I would like to ask Mrs. Sullivan if she has any questions.

Mrs. SULLIVAN. I do. Thank you, Mr. Chairman. I am very much interested in this and I believe the study that has been going on for the last year and a half on all of the Merchant Marine Academies both Federal and State and industry is about completed. I have a few questions that I would like to have cleared up in my own mind pertaining to the Coast Guard and your supervision of the people who have received this training.

With that, Admiral, I would like to ask you this. You have stated that since 85 percent of all the casualties involve human error to some extent, improvement of personnel professional skill levels holds great promise for a reduction in casualties. As you know, every year this committee authorizes the appropriation of several million dollars for maritime education and training.

I am concerned that perhaps some of this money is being spent to educate students in areas which they should be pursuing at their own expense, rather than on the kind of training that will equip them to serve as competent officers aboard the high technology vessels of today and tomorrow.

Would you specifically enumerate the areas in which the experience of the Coast Guard would indicate that professional skill levels need to be upgraded and, second, what changes should be made in our present system of maritime education to bring about these improvements?

This may be too broad a question to answer off the cuff, but if you cannot answer it fully now I wish you would answer later.

Admiral BENKERT. I think I can at least try to answer you, Mrs. Sullivan.

I think that a few moments ago I read out a portion of an excerpt from the agreement which the Coast Guard and the Maritime Administration have recently signed, looking toward exactly this subject which you are talking about, and in it we tried to itemize some of these critical areas that we feel are very important, looking toward an expansion of our retraining efforts.

Primarily, I indicated these critical areas include such things as vessel navigation, ice pilotage, our handling of very large crude carriers, an emphasis on radar usage and other types of sophisticated electronic navigational equipment, improvements in firefighting, damage control, knowledge relative to the carriage of chemicals, liquified natural gas and some of the other exotic cargoes which we are getting more and more of today, work on pollution prevention and abatement, tanker operational safety and emphasis on automated propulsion plants and a look toward the future toward qualification relative to nuclear powerplants.

Mrs. SULLIVAN. Now you mentioned these things before I came in?

Admiral BENKERT. Yes, ma'am.

Mrs. SULLIVAN. So we can refer back to the detail, but I think in going over your transcript, if you would repeat these plus the second question, what changes should be made in our present system of maritime education to bring about the improvements, I think you can go into some detail with respect to that.

[The following was submitted:]

TRAINING IMPROVEMENTS

From the information available to the Coast Guard, such as examination results, the present system of maritime education appears to adequately provide the young officer with the basic knowledge necessary to safely perform the duties as Third Mate or Third Assistant Engineer. After acquiring this basic knowledge, however, there is little formal training available from which he can draw additional professional knowledge. It is towards this goal, that the Coast Guard recently signed an agreement with the Maritime Administration, pooling resources, both financial and personnel, for retraining efforts of professional marines. This agreement does not intend to open new training facilities, but rather encourage those academies already in existence to expand their operation to provide for subsequent training of professional mariners, especially in those critical skill areas previously mentioned, i.e., radar, firefighting, damage control, tanker operational safety, etc.

Mrs. SULLIVAN. I wanted to ask you, too, do you consult frequently with the training schools? I know you have your own Coast Guard Academy.

Admiral BENKERT. Yes, ma'am.

Mrs. SULLIVAN. But do you frequently consult with the Merchant Marine Academy and the State academies?

Admiral BENKERT. Yes; we do, Mrs. Sullivan. I can answer that by saying we have a continuing, constant consultation with all of the educational establishments that are involved in this subject on practically a day-in-and-day-out basis. We look at the curriculum. We look jointly at our examinations and their scope. We look at what individuals attending these institutions should be prepared for, both in the way of our examinations for license and in the way of what they will have to be doing aboard ship in the future.

I give you an unqualified answer of yes, we have a very good working, day-in-and-day-out relationship with the institutions.

The CHAIRMAN. Good. Does the Coast Guard require the officer personnel aboard the U.S.-flag merchant vessels to participate in any kind of program of continuing education and if not, would such a requirement be desirable and what steps does the Coast Guard presently take to assure that our merchant marine officers are sufficiently knowledgeable concerning the current technology of the ships that they are operating?

Now, these are the men who are already in service.

Admiral BENKERT. Well, I think a short answer to that is we do not, and just how do I put this—we do not require individuals aboard a vessel today to undergo continuing educational programs, but we are involved in the development of and the implementation of—and we look for expansion of our efforts at retraining of individuals and giving them a broader perspective in some of these new fields that I just mentioned a moment ago.

I think that the developments of today are such that there are a number of industry schools which are, in fact, in conjunction with an overview by us, conducting upgrading and retraining programs for individuals who are sailing aboard vessels.

We are involved in discussions with various operating companies in the marine industry who are developing programs of their own for constantly updating their people.

I think we feel that this particular field is a very important one which perhaps in the past has not been given enough emphasis, Mrs. Sullivan, and we are trying to do this now.

Mrs. SULLIVAN. More of the emphasis has been placed on possibly the ship operator to see that their chiefs and special officers are highly qualified.

Admiral BENKERT. I think the emphasis in the past has been placed basically on getting the men a license in the first place, getting them the training and the experience which will enable them to upgrade their license through our examination program, and we feel that particularly with the advent of the new types of vessels and their greater sophistication and greater complexity today there is a need in between here for upgrading the individual's knowledge for proper operation of the vessels and for his own edification in properly performing his job.

Mrs. SULLIVAN. I saw a good example of that on a ship last year that is operated almost entirely by engineers. Everything was so automated. The chief engineer was completing his cycle of workdays and I think his intention was to go back to the engineering school.

Admiral BENKERT. Yes, ma'am.

Mrs. SULLIVAN. From discussing it with him I do not think he was urged to do so but only because he was so intensely interested and I think the company was lucky to have a man like that who would take his time off to further his own knowledge and career.

How long does a license last? How often do they have to have it renewed?

Admiral BERKERT. The basic period is 5 years, Mrs. Sullivan. All of our licenses are for a 5-year period and, of course, subject to renewal at that time.

Mrs. SULLIVAN. Suppose a man obtained his initial license as either a deck or engineering officer back around 1950, sailed for 3 years, and then came ashore. Would it be possible for him to have kept his license renewed up to the present time?

Admiral BENKERT. Yes, it would, Mrs. Sullivan.

Mrs. SULLIVAN. And what would be required by the Coast Guard to renew his license?

Admiral BENKERT. Well, depending on whether you are speaking of a deck officer or an engineering officer, there are differences, but in the case of the engineering officer under our present rules, this individual could renew his license each 5 years with essentially no requirements as far as educational or sailing requirements are concerned.

Mrs. SULLIVAN. What about examinations?

Admiral BENKERT. No examinations.

Mrs. SULLIVAN. Well, then, assuming that a job would be available to him and he had not sailed for many years but had kept up his license, would it be possible for him to go to sea today on this license?

Admiral BENKERT. As an engineer, yes, ma'am.

Mrs. SULLIVAN. Without knowing all of the new technologies?

Admiral BENKERT. Yes, ma'am, that is true. Under the present rules he would be able to sail today.

Mrs. SULLIVAN. May I say that I have found that, too, on this ship, that he came on as a licensed engineer but he did not have any idea about how to operate the technical equipment that was on this ship and yet, he had the license.

Admiral BENKERT. I really feel that in the vast majority of cases, Mrs. Sullivan, that this would be unusual today because except in an emergency case of the hiring of personnel, there is a certain control over this by the employer in the sense of who he employs or how his agreements are with the appropriate labor organization relative to the hiring of individuals, and this would be unusual that a man would spend a very long period of time ashore for example and then be placed aboard a vessel immediately as a chief engineer.

Mrs. SULLIVAN. I would not mean as a chief, no, but as a qualified engineer.

Admiral BENKERT. Perhaps as a third assistant. The only other thing I can say about that, mam, is that it is conceivable that in many cases he may have worked ashore in some engineering capacity which might be somewhat comparable to what he would have aboard a vessel and he would be perhaps reasonably qualified immediately or within a very short time on the vessel.

Mrs. SULLIVAN. This is one version of a license renewal without the proper examinations that I have been discussing with some of the labor unions who represent these men and the complaint had been these men come on as a licensed engineer and yet, know nothing of the new things that have happened and they get the salary and all of the benefits that go with it, but they have to be trained right on that ship and of course, they are not as valuable as they should be if they were required to do a certain amount of furthering of their education.

Admiral BENKERT. Well, I think you pinpoint exactly one fact of what I was speaking, looking into this field of retraining for individuals who are, or perhaps are not, regularly sailing.

Mrs. SULLIVAN. There are opportunities for them to get this training now especially in the industry schools.

Admiral BENKERT. Yes, ma'am.

Mr. ROONEY. Will the gentlelady yield?

Mrs. SULLIVAN. Yes.

Mr. ROONEY. To pursue that point a little further you did mention you had an agreement with the Maritime Administration dated I

believe September 6, 1974, regarding training and the certification of personnel.

I wonder if you could just give us the reasons for this agreement?

Admiral BENKERT. Well, I think the basic reason, sir, is from perhaps slightly a different point of view but coming together in the end, both the U.S. Maritime Administration and the Coast Guard are extremely interested and we are in one sense or another required by law of course to oversee this type of function.

The Maritime Administration has certain responsibilities under the law for training and they have certain budgeting requirements and so forth for this.

The Coast Guard is responsible to insure that whatever training is pursued produces a qualified man for the job, so in coming to an agreement all we have done is put down on paper what we have been putting into practice for a number of years, which is that we will look at this problem jointly; that we will pool our thoughts on the type of training the individual should have, the scope of training and what it should aim him for, and at the same time in looking at our qualifications program on the Coast Guard side we will make sure that this training fills the bill for what we feel is necessary as a qualification for the individual.

Mr. ROONEY. So they are the main provisions of the agreement?

Admiral BENKERT. Yes, sir.

Mr. ROONEY. And you have a very close liaison with the Maritime Administration?

Admiral BENKERT. Yes, sir, we do.

Mrs. SULLIVAN. I just have two more questions. In your statement Admiral, you refer to the fact in fiscal 1974 the Coast Guard's investigation of misconduct by licensed or certificated merchant marine personnel resulted in formal hearings before an administrative law judge on some 798 violations of a serious nature.

Does the Coast Guard have any information concerning the type of maritime training received by the individuals involved in these violations?

For instance, how many were graduates of the Federal academy, how many were graduates of one of the State academies, how many received their training in industry schools, and how many came up through the ranks?

If this question cannot be answered now I am sure it can be supplied later for the record.

Admiral BENKERT. Yes, ma'am.

Mrs. SULLIVAN. And please supply for the record a breakdown of the principal categories of these offenses.

Admiral BENKERT. Yes, ma'am, we can do that.

Mrs. SULLIVAN. And the last thing I would like you to do, would you furnish for the record how many of the men presently serving as officers aboard the U.S. flag merchant vessels are graduates of the Federal academy, how many are graduates of the State academies, how many are graduates of the industry schools and how many came up through the ranks.

If you could do so, I wish you would please supply that information for the record and also the retention rate of the individuals in each of these categories.

That is kind of a large order, but I would appreciate it.

Admiral BENKERT. I think we can make a pretty good stab for it.

Mr. ROONEY. And I will provide the questions immediately following this meeting.

[The information to be supplied follows:]

MARITIME TRAINING OF INDIVIDUALS INVOLVED IN VIOLATIONS

Unfortunately, the Coast Guard, at this time, has no method to readily retrieve profile data on an individual who is involved in a violation or casualty. This information is only maintained at the office where an individual was first issued a license. With the present record keeping system, it would be necessary to review the personnel records at Coast Guard Headquarters to establish where an individual's license was issued, then go to that office and review his file to establish what was his qualifications at the time of making application for his original license.

The Coast Guard has been trying for sometime to implement a Management Information System which could provide this type of information. However, due to budgetary constraints these capabilities have not developed. A recent study of Merchant Vessel Personnel Division, by the National Archives and Records Service reconfirms the need for an information system. This study recommends consolidation and computerization of merchant marine personnel data. Among other things these recommendations do provide a method to retrieve data on personnel information to relate to casualties, which is not now available.

CATEGORIES OF OFFENSES, SUSPENSION AND REVOCATION PROCEEDINGS

TABLE 5.20-165.—SCALE OF AVERAGE ORDERS[1]

Type of Offense	Number of times committed				
	1st	2d	3d	4th	5th
Group A (1) (offenses committed within 3 years are to be considered as repeated):					
Absent over leave	(4)	1-0	3-0	6-0	(5)
Absent without leave	(4)	1-0	3-0	6-0	(5)
Failure to join (domestic)	(4)	1-0	3-0	6-0	(5)
Inattention to duty (unintentional)	(4)	1-0	3-0	6-0	(5)
Violation of a regulation (unintentional)	(4)	1-0	3-0	6-0	(5)
Group A (2) (offenses committed within 3 years are to be considered as repeated):					
Creating a disturbance aboard ship due to intoxication	(4)	2-0	4-0	(5)	
Failure to join (foreign)	(4)	2-0	4-0	(5)	
Failure to perform duty	(4)	2-0	4-0	(5)	
Group B (time between offenses not to have any bearing when considering whether man is repeater):					
Attempt to illegally take or smuggle property ashore	6-12	6-0	(5)		
Desertion (domestic)	6-12	6-0	(5)		
Failure to report marine casualty	6-12	6-0	(5)		
Failure to manifest	6-12	6-0	(5)		
Neglect of duty	6-12	6-0	(5)		
Possession of intoxicating liquor	6-12	6-0	(5)		
Possession of firearms	6-12	6-0	(5)		
Sleeping on watch	6-12	6-0	(5)		
Use of profane and threatening language to superior	6-12	6-0	(5)		
Violation of a regulation (intentional)	6-12	6-0	(5)		
Willful disobedience of a lawful order	6-12	6-0	(5)		
Group C (time between offenses not to have any bearing when considering whether man is repeater): Assault	1-0	4-0	(5)		
Group D (time between offenses not to have any bearing when considering whether man is repeater):					
Inattention to duty (international)	3-0	12-0	(5)		
Illegal possession of cargo or ship's property	3-0	12-0	(5)		
Neglect of duty; damage to vessel, cargo, or personnel (ordinary negligence)	3-0	12-0	(5)		
Pilfering cargo or ship's equipment	3-0	12-0	(5)		
Refusing to perform duty	3-0	12-0	(5)		
Sale of ship's property	3-0	12-0	(5)		
Theft	3-0	12-0	(5)		

See footnotes at end of table p. 103.

CATEGORIES OF OFFENSES, SUSPENSION AND REVOCATION PROCEEDINGS—Continued

TABLE 5.20-165—SCALE OF AVERAGE ORDERS[1]

Type of Offense	Number of times committed				
	1st	2d	3d	4th	5th
Group E (time between offenses not to have any bearing when considering whether man is repeater):					
Assault and battery	6-0	(2)			
Assault with dangerous weapon (no injury)	6-0	(2)			
Destruction of ship's cargo or property	6-0	(2)			
Desertion (foreign)	6-0	(2)			
Continued disobedience of lawful order	6-0	(2)			
Embezzling ship's cargo or property	6-0	(2)			
Neglect of duty, damage to ship, cargo,or persons (gross or willful)	6-0	(2)			
Interference with master, ship's officer, or Government official in performance of official duties	6-0	(2)			
Smuggling of property	6-0	(2)			
Sale of intoxicating liquor	6-0	(2)			
Group F					
Assault with dangerous weapon (injury)	(3)				
Malicious destruction of ship's property	(3)				
Misconduct resulting in loss of life or serious injury	(3)				
Molestation of passengers	(3)				
Murder or attempted murder	(3)				
Mutiny	(3)				
Perversion	(3)				
Possession, use, sale, or association with drugs, including marijuana	(3)				
Sabotage	(3)				
Serious neglect of duty	(3)				
Serious theft of ship's property or stores	(3)				
Smuggling of aliens	(3)				

[1] Change, Federal Register, Sept. 17, 1974.
[2] Admonition.
[3] Revocation.

7. SPECIFICATIONS

A. Group A1	14	3	0	20	9
B. Group A2	10	13	0	144	1
C. Group B	36	9	0	43	20
D. Group C	7	2	1	14	0
E. Group D	15	2	0	18	18
F. Group E	5	5	2	49	0
G. Group F	1	1	0	12	0
H. Narcotics 239 (misconduct)	0	4	0	13	0
I. Narcotics 239b (violation of Public Law 500)	1	0	0	14	2
J. Oil pollution	11	10	0	73	4
K. Incompetence	3	0	0	3	0
L. Negligence inattention to duty	19	0	0	13	8

Note: Total specifications—652.

Source of Officers

The Coast Guard, at this time, has no method to readily retrieve profile data on any person licensed by the Coast Guard. This information is only maintained at the office where the officer was first issued a license.

The Maritime Administration does maintain a computer bank on merchant marine personnel. The information stored, however, does not contain an individual's name, training or educational background. The individual is identified by a number only. To establish an individual's training it would, therefore, be necessary to acquire a record of all officers employed in a given time period from the MARAD data bank, and manually cross check the identifying number with an index at Coast Guard Headquarters to establish names. With the names, the license card file will establish in what field office each individual's first license was issued. A manual examination of the individual's file, in that office, will establish his qualifications when he filed application for his original license. Testimony was given before this committee on 26 June 1974, by Deputy Assistant Secretary for

Maritime Affairs, Howard F. Casey. Mr. Casey furnished the committee with a Department of Commerce, Maritime Administration report dated May 1974. That report, "Deck and Engine Officers in the U.S. Merchant Marine, Supply and Demand, 1974–1984," which was compiled from various sources, is an indicator of the background, retention rate and projected trends of licensed officers presently employed on merchant vessels of the United States.

Mr. ROONEY. Are there further questions?

I have one final question and I think it is a very important one as far as the defense of this country is concerned.

Does the Coast Guard believe it would be desirable to create some sort of a permanent marine reserve pool of officers who would be subject to recall in the event of a national emergency?

Admiral BENKERT. I think my response to that, sir, would be no, that we would not feel this would be necessary, primarily, because we do have a good handle on people who are capable, who have sailed in our merchant marine.

We also, through the Naval Reserve and now through the Coast Guard Reserve have some of these young men tagged and have, I think, a very good handle on the people through these mediums.

I do not believe it would be necessary to go into some other form of categorization, sir.

Mr. ROONEY. Do you feel that once an individual graduates from one of these State academies he has no further obligation to his country insofar as the national emergency is concerned? Is that what you are saying?

Admiral BENKERT. No, sir, what I am saying is that if you are talking about an obligation for the individual in the sense of a required length of service upon graduation—well, perhaps I do not understand your question.

Mr. ROONEY. Do you think it would be advisable to create and maintain a pool of officers, graduates of these State Academies and of course, Kings Point who would be subject to recall in case of a national emergency? That is the question.

Admiral BENKERT. Well, I think it is advisable for us to be able to pinpoint personnel who have gone through the schools and have an educational background and are, in fact, licensed for service in the merchant marine.

We do have that much of a capability right now. As to whether there should be a pool required by law in which we could automatically lift a man out under conditions of national emergency to sail, I would not feel this was within my purview to answer, Mr. Rooney.

Perhaps I still do not understand your question fully.

Mr. ROONEY. Well, the question was very simple, Admiral. Should we have a national pool for reserve officers in case of an emergency, and this pool would be administered by the Coast Guard. Do you feel that there is no need for such a pool?

Admiral BENKERT. I do not really feel this is within our purview. We can, in case of national emergency, we can pinpoint people who are qualified to sail aboard vessels through our own records.

As far as being able to immediately call these people up on active duty, if we were all of a sudden to get a large number of ships which had to be manned, whether a pool of personnel under this type of operation should be within the Coast Guard's authority or not I would have to give it some thought, Mr. Rooney.

Mrs. SULLIVAN. Would you yield?

Mr. ROONEY. Of course.

Mrs. SULLIVAN. If the Coast Guard would not have this responsibility, who would?

Admiral BENKERT. Well, it seems to me that it is sort of an adjunct to our whole national effort in time of emergency and, of course, the Coast Guard as you are well aware would become a part of the Navy in that time.

Mrs. SULLIVAN. But the Navy would have no knowledge of this type of personnel. The Army would have no knowledge and neither would the Air Force. You are the last fourth arm, so would it not naturally be with you?

Admiral BENKERT. If you contemplated a callup of these kinds of people with this kind of background under a legislative requirement for somebody to oversee this, yes, I would say the Coast Guard would be the logical organization to do this.

Mrs. SULLIVAN. You do not feel that the Coast Guard has any obligation now by law to keep such an up-to-date listing?

Admiral BENKERT. No; I do not believe we do by law, Madam Chairman, no.

Mrs. SULLIVAN. That I do not know either, but it just seems logical that you would be the one.

Admiral BENKERT. I am quite sure that we do not have that obligation by law at the present time.

Mr. FORSYTHE. Would you yield, Madam Chairman.

Mrs. SULLIVAN. Yes.

Mr. FORSYTHE. But you do do it.

Admiral BENKERT. What we have, sir, is that in our records we have records of every license issued to individuals. We have records as to the source. We have a record of his latest address as far as the time of his last renewal of license and if he is sailing aboard ships today through the medium of shipping articles, we have this information at hand.

Mr. FORSYTHE. The question then becomes a mandatory obligation for service and that is the one that you say is not in your purview to answer.

Admiral BENKERT. That is right.

Mrs. SULLIVAN. Or a mandatory requirement to keep such a list. This was the stress that I laid upon it because I did not think they had the authority to call them up.

Admiral BENKERT. That is right. We have a requirement to keep it, but what we do with it is another subject.

Mr. FORSYTHE. You say you do have an obligation to keep these records under existing law?

Admiral BENKERT. To keep the records; yes. We do that and we maintain this type of record, yes, sir.

Mrs. SULLIVAN. So if we wanted to impose a further obligation we would need some systemization.

Admiral BENKERT. And we would have the basis upon which a further requirement might be predicated; yes.

Mr. ROONEY. Thank you very much Admiral Benkert, and Captain Caffrey for your very candid responses to our questions and for your contribution to this ad hoc committee.

The meeting stands adjourned.

[The following was submitted for inclusion in the record:]

DEPARTMENT OF TRANSPORTATION,
U.S. COAST GUARD,
Washington, D.C., December 20, 1974.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives, Washington, D.C.

DEAR MADAM CHAIRMAN: On 19 November 1974, RADM W. M. Benkert, Chief, Office of Merchant Marine Safety, U.S. Coast Guard testified before the Ad Hoc Subcommittee on Maritime Education and Training. You requested certain additional information for inclusion in the record. Regretfully, not all of the additional information, having to do with specific background material on merchant marine officers, is reasonably available.

By way of explanation, the following is offered as to what would be entailed in attempting to retrieve the data requested on pages 49 and 50 of the transcript:

Objective

To determine the source derivation of the 223 officers licensed by the Coast Guard who were charged under R. S. 4450 proceedings during FY 1974.

Procedures necessary to attain objective

1. Each of the 798 decisions and orders made by the Administrative Law Judges in FY 1974 would have to be individually reviewed to abstract the names and identifying number of the 223 licensed officers;

2. With the information gained from step 1, each officer's hard copy record of licenses issued would have to be manually removed from the central record maintained at Coast Guard Headquarters for a determination of which Coast Guard Marine Inspection Office issued the officer's original license;

3. Correspondence would have to be initiated to each issuing office requesting them to review each of the officer's local file. The information as to the individual officer's educational background could then be ascertained from the first license application (CG Form 866), or attachments thereto, submitted by the officer;

4. Upon receipt of this information, Coast Guard Headquarters personnel could begin tabulations to indicate each officer's name, grade of initial license, grade held at time of R. S. 4450 proceedings and source derivation.

Feasibility

It is estimated that obtaining the objective would require approximately 1015 man-hours, spread over a period of not less than 3 months.

Objective

To determine the source derivation of approximately 13,000 officers licensed by the Coast Guard who were actively employed aboard merchant vessels of the United States during FY 1974.

Procedure necessary to attain objective

1. The Maritime Administration maintains a computer bank on merchant marine personnel. The information stored, however, does not cover an individual's training, educational background or name. The data on merchant marine personnel contained in the MARAD computer is maintained by an identifying number only. With the present recordkeeping system, it would be necessary to acquire a record of all officers employed in FY 1974 from the MARAD data bank and cross check the identifying number with an index at Coast Guard Headquarters to establish names. With the names established field units would have to be contacted, as described above, to obtain the desired data.

Feasibility

Using present resources, it is estimated that obtaining the objective would require approximately 39,000 man-hours spread over a period of not less than 9 months.

The Coast Guard has long recognized the inadequacies inherent in its manual recordkeeping procedures. Although we are in compliance with existing statute, the system is simply not responsive to current needs and dictates. Several attempts have been made to remedy this situation, and, as was noted on page 13 of the transcript a recent effort is receiving priority attention. This is reflected in a study conducted by the National Archives and Records Service and completed in November 1974. Hopefully, recommendations relating to this data collection, paperwork simplication and computerized storage of seamen's personnel records will be implemented in the not too distant future.

In the meantime it is hoped that your committee's needs may be satisfied with the information provided. My staff will remain available for further discussion of this matter.

Sincerely,

O. W. SILER,
Admiral, U.S. Coast Guard Commandant.

AD HOC COMMITTEE ON MARITIME EDUCATION AND TRAINING,
JANUARY 2, 1975.

Re: Testimony on Nov. 19, 1974 by Rear Admiral Benkert

Adm. OWEN W. SILER,
The Commandant,
U.S. Coast Guard,
Washington, D.C.

DEAR ADMIRAL: This is in response to your letter of December 20, 1974 regarding the following questions which I asked of Rear Admiral William Benkert at a hearing before the Ad Hoc Committee on Maritime Education and Training on November 19, 1974:

1. In your statement, Admiral, you refer to the fact that in fiscal year 1974 Coast Guard investigations of misconduct by licensed or certificated Merchant Marine personnel resulted in formal hearings before an Administrative Law Judge on some 798 violations of a serious nature.

Does the Coast Guard have any information concerning the type of maritime training received by the individuals involved in these violations? For instance, how many were graduates of the Federal Academy; how many were graduates of one of the State Academies; how many received their training in industry schools, and how many came up through the ranks?

2. Please supply for the record a breakdown of the principal categories of these offenses.

3. Please furnish for the record the number of men presently serving as officers board U.S.-flag merchant vessels who are graduates of the Federal Academy; the number who are graduates of one of the State Academies; the number who are graduates of an industry school, and the number of graduates who came up through the ranks.

4. What is the retention rate of the individuals in each of these categories?

I very much regret that this information is not readily available in the records of the Coast Guard, and it is certainly not my intention to impose any unreasonable burden on your agency. However, in view of the importance of these facts to a number of very basic questions which the Committee needs answered, it will be necessary for the Coast Guard to find a suitable way of responding to these questions.

With kindest regards, I am

Sincerely,

LEONOR K. (Mrs. JOHN B.) SULLIVAN,
Chairman.

[Whereupon, at 11:40 a.m., the Ad Hoc Subcommittee on Maritime Education and Training adjourned.]